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Geo. T. Evans
THE

DUBLIN PRACTICE

OF

M I D W I F E R Y .

BY

HENRY MAUNSELL, M.D.

~~~~~  
WITH NOTES AND ADDITIONS

BY

CHANDLER R. GILMAN, M.D.,

PROFESSOR OF OBSTETRICS, AND THE DISEASES OF WOMEN AND  
CHILDREN IN THE COLLEGE OF PHYSICIANS  
AND SURGEONS, NEW YORK.

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LATE PROFESSOR OF OBSTETRICS AND THE DISEASES OF WOMEN AND CHILDREN
IN THE COLLEGE OF PHYSICIANS AND SURGEONS, NEW YORK.

AS AN EXPRESSION OF HIGH PROFESSIONAL RESPECT

AND AN ACKNOWLEDGMENT OF MUCH

PERSONAL KINDNESS,

THIS WORK IS RESPECTFULLY DEDICATED,

BY HIS FRIEND,

THE EDITOR.



AUTHOR'S PREFACE.

THOSE who are conversant with the teaching of obstetric medicine must have felt the difficulty of satisfactorily answering a question commonly put to them by students: What book do you recommend me to take to the Lying-in room? Yet there is, perhaps, no department of the healing art which can boast of more elaborate and valuable elementary systems than Midwifery. The works, however, of Denman and Burns, Ramsbotham and Merriman, though excellent in the study, do not supply the want indicated in the question of the student. Their size and price (if there were nothing else) disqualify them for this service; and giving, as they do, the history and principia of the science, conclusions and rules cannot be obtained from them with the facility and quickness so desirable to the student and practitioner during the bustle of actual business. In addition, as an Irish teacher of Midwifery, I must say, that though, in general principles, there can be little room for disagreeing with the distinguished authors just named, still in many points of practice the lessons of the Dublin School differ materially from those inculcated in

their books. Of those publications upon the subject specially intended as manuals, it does not become me to speak ; and I shall, therefore, merely state shortly what I have wished to do, and what to avoid, in the construction of the present work. My object, then, has been to give a concise, but, at the same time, sufficiently full and perfect account of practical Midwifery ; not merely to furnish an index of hard-named diseases and a jumbled catalogue of discordant remedies, but to supply an available knowledge of all appliances and means that are known to be requisite for the safe conduct of a patient through the perils and accidents of childbirth. In attempting to attain this object, it has been my endeavour to state honestly my own practice, which, I believe, agrees pretty closely with that generally taught in the schools of this city, and upon important points will not be found to differ much from that recommended by the standard authorities in Midwifery. I have, however, given few or no references, as these can be easily obtained from the larger works, and here would have served merely to swell the book and dilute the matter, which it is desirable to offer in a form as concentrated as possible. In a word, remembering the strictures of Lord Bacon, it has been my wish, not so much to give “ a history large of bulk and pleasant for variety, but to weed out fables, quotations,

needless controversies and flourishes, which are more proper for table talk and stories in a chimney corner, than for an institution in philosophy." It is next to impossible to write a Preface without egotism, and on that account a Preface should be brief: this shall, therefore, be concluded by the simple statement that the material for the following pages was drawn exclusively from a syllabus of my lectures, without any works being at the time consulted upon the subject. By the adoption of this plan I hoped that the language and style might be found to possess a freshness not to be expected in a mere compilation. How far this and the other ends already alluded to may have been attained, must now be left to the judgment of the profession.

EDITOR'S PREFACE.

THE work of which an American edition is now presented to the medical public, came, rather accidentally, into my hands, soon after its publication. I was much struck with its clearness, and its eminently practical character.

Within the last two years I have loaned my copy to quite a number of medical students, and from them I have had but one opinion, *viz.* that it was "just what they wanted." Believing, as I do, that intelligent medical students are the best judges of what a text book *ought* to be, I was induced, by their request, to superintend the publication of an edition, chiefly for the use of my class, but, at the same time, not doubting that it would meet the wishes, and supply the wants of very many obstetric students throughout the country. From the high opinion I have expressed of this work, it will readily be believed, that I would make additions and alterations to it with great caution; a few, however, seemed necessary, and have been made. The chief of these is the chapter on pregnancy, (Chapter vii.) which has been almost entirely rewritten. In other places I have ventured to make

a few additions, chiefly amplifications, they are indicated by brackets [thus]. On one or two occasions I have felt compelled to dissent from the opinions of the Author; in such cases my views are expressed in notes, which are distinguished from those of the author by the signature, ED. Hoping that the work may prove useful to medical students, and especially that my own class may receive this attempt to promote their improvement, with the same kindness with which they have rewarded my previous labours, I commend the work to the candid consideration of the profession.

P. S.—The Anatomical descriptions in Chapter I, are condensed from Knox's Translation of Cloquet.

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THE
DUBLIN PRACTICE
OF
MIDWIFERY.

CHAPTER I.

THE PELVIS.

It is customary to commence the study of Midwifery with the consideration of the bony structure of the pelvis ; a knowledge of the anatomy of this part being, in fact, essentially requisite for the understanding of the mechanism whereby the foetus is, either naturally or artificially, transmitted into the world. At present I shall strictly confine my observations to such of its properties as may be of obstetric interest, other points being sufficiently noticed in surgical and anatomical works.

The pelvis, then, is a firm osseous case, formed in the adult of four bones,—the two ossa innominata, sacrum, and coccyx.

[The os innominatum, called also the iliac, the coxal or haunch bone, is a double, unsymmetrical bone, of a quadrilateral form, and very irregular

figure. It is the largest of the flat bones, and forms the lateral and anterior part of the pelvis.

It has two surfaces, the external or femoral, and the internal or abdominal surface.

The external or femoral surface is of no great interest to the accoucheur ; superiorly and posteriorly it forms a wide fossa, convex above, concave below, called the *dorsum* of the ilium, or sometimes *the external iliac fossa*. Downwards and forwards from this surface is the *acetabulum* or cotyloid cavity, in which the head of the femur is lodged. Before and below the cotyloid cavity, is observed the *foramen ovale*, called also the *thyroid*, or *obturator foramen*. This perforation is oval in the male, triangular in the female, though the angles are more or less rounded off. At the upper edge of this hole posteriorly, there is a groove, in which the obturator vessels and nerves pass. In the recent subject the obturator foramen is closed, except at the groove before spoken of, by a dense fibrous membrane, the *obturator ligament*.

The internal or abdominal surface of the iliac bone, is at the upper part directed forwards, at the lower backwards ; at the upper and posterior part there is a rough, irregularly oval surface, corresponding with the lateral surface of the sacrum, to which it is articulated. The rest of the upper part of this surface is occupied by a wide cavity of no great depth, called the *iliac fossa*, or to distinguish it from the *dorsum*, the *internal iliac fossa*. It is limited below, by a broad, and rounded prominent line, called *linea ilio pectinea*, which forms a part of the superior strait. Beneath this line is observed a

smooth, inclined, nearly plain surface, covered by the obturator internus, and levator ani muscles, also the inner orifice of the obturator hole, with its groove, and lastly, a second surface, narrower above than below, which corresponds to the bladder.

The os innominatum has four edges.

1. *The upper edge, called also the iliac crest.* This is thick, uneven, convex, inclined outwards, except posteriorly, where it is directed a little inwards, twisted upon itself like an *italic s*, thinner in the middle than at the extremities, and longer in the female than in the male, being six inches in extent measured directly and eight when its turnings are followed.

2. *Lower edge*, shorter than the other, inclined inwards, presenting below a thin crest, more oblique and blunter in the female, bent outwards forming with its fellow on the other side, *the pubic arch or angle.* This crest is surmounted anteriorly by a vertical surface, of an elliptical form, which uniting with a similar surface, on the bone of the other side forms *the symphysis of the pubes.*

3. *Posterior edge*, very irregular, oblique from above downwards, and from without inwards, at its union with the upper edge it forms *the posterior superior spinous process of the ilium*, a large projecting spine, which is separated by a notch from another spine, called *the posterior inferior spinous process.* This latter is rounded, flat, sharp, and formed by the posterior part of the surface, which articulates with the sacrum. Beneath this process there is a deep notch, which with a part of the sacrum

forms the *great sciatic notch*; it is terminated below by a thin, pointed, triangular spine, projecting more or less inwards and downwards, called the *sciatic spine*. Beneath this is a notch or groove, round which the tendon of the obturator internus plays like a pulley, and beyond this a broad rounded or oval eminence called the *tuberosity* of the ischium.

4. *Anterior edge*, concave, oblique above, horizontal below, uniting with the upper edge it forms the *anterior superior spinous process of the ilium*. Below, and a little forward of this we have the *anterior inferior spinous process*, blunter and less prominent than the other. Proceeding downwards and forwards we have, first the *ilio-pectineal eminence* and then the *spine* of the pubes near the union of the anterior with the lower edge.

The os innominatum is developed in three parts or portions, the *ilium* which is uppermost and most posterior, the *pubes* anterior and the *ischium* below. The upper and horizontal portion of the pubes is called its *body*, the lower its *ramus*; so of the ischium, the posterior portion constituting the *body*, the anterior the *ramus*.

Sacrum. This is a symmetrical pyramidal, triangular bone, curved forwards below, situated at the posterior part of the pelvis, having one of the ossa innominata on either side, the vertebral column above, and the coccyx below.

It is perforated for its whole length by a canal called the *sacral*, a continuation of the vertebral.

In the sacrum we remark the following parts.

Four surfaces, a *spinal* or *posterior*, a *pelvic* or

anterior, and two *lateral*. The *spinal* or *posterior surface* is convex, rough and irregular; in the median line, are four or five eminences which appear to be imperfect or rudimental spinous processes; they are every now and then united, and form a continuous ridge. Beneath them is the *sacral canal* in which is lodged the lower portion of the *cauda equina*: the canal terminates in a triangular opening, closed behind in the recent subject, by the *sacro-coccygeal* ligament and limited laterally, by two tubercles called the *horns* of the sacrum.

On either side of the sacral eminences are four or five holes communicating with the sacral canal, through which the posterior sacral nerves pass out.

The *pelvic* or *anterior surface* of the sacrum is the part most interesting to the accoucheur. It is smooth, and concave, and its concavity is called the hollow of the sacrum; it is traversed by four prominent lines, indicating the points of the union of the five different pieces of which this bone is composed in childhood. Between these lines we see five plates or surfaces slightly concave, most so below which answer to the anterior surfaces of the bodies of the vertebræ. Laterally from the prominent lines are the *anterior sacral foramina*, four in number, more smooth and regular in shape than the posterior, though like them diminishing in size as they go downwards. In the centre of the upper surface of this bone there is a projection, which in the natural position of the parts overhangs the hollow of the sacrum, and diminishes the antero-posterior diameter of the superior strait, this is called the *promonto-*

ry of the sacrum, and is one of the chief *landmarks* used by an accoucheur. The two *iliac or lateral surfaces*, are irregularly triangular, very rough, and corresponding to the surfaces of the iliac bones, to which they are united.

The base of the sacrum is directed upwards, and a little forwards, and by its oval central portion is united to the last lumbar vertebra. *The summit* of the bone is directed downwards and forwards, and to it is attached the coccyx.

The coccyx. This little bone is developed in three, four or five pieces, whose size diminishes from above downwards; it is attached to the sacrum by anterior and posterior ligaments. This union admits of some motion early in life, but ankylosis (*false*) usually takes place about thirty, unless its occurrence is prevented by child-bearing. The coccyx has a general resemblance to the sacrum, being convex and rough behind, concave and smooth before, and prolonging the concavity or *hollow of the sacrum*.]

These different bones are connected to one another by four articulations.

Two serve to unite the sacrum with the os innominatum of either side. These are denominated the sacro-iliac synchondroses, and possess remarkable strength, both from the manner in which the prominences and hollows of the opposed surfaces are, as it were, morticed into each other, and also from the strong bands of ligament stretched across the posterior and upper edges. A ligamentous expansion further strengthens the front of the articulation; but this is thin and membranous, that it may

not, by its bulk, diminish the capacity of the pelvic cavity. Two other remarkable ligaments on either side connect the sacrum and ossa innominata, but seem rather intended to complete the walls of the pelvis than to add security to the joint. These are the anterior and posterior sacro-sciatic ligaments, both arising from the sides of the sacrum and coccyx, and attached, the former to the spine and the latter to the tuberosity of the ischium.

The third pelvic articulation is that between the two ossa innominata themselves, and denominated the *symphysis pubis*. This differs from the sacro-iliac synchondroses in having an interarticular substance interposed between the two osseous surfaces, in addition to the fibro-cartilage covering each of those. The joint is secured by bands of ligament, which, for the reason already assigned, are stronger and more bulky externally. There is also a ligament termed the sub-pubic, which occupies the apex of the arch formed by the rami of the pubic bones.

The last articulation is that between the sacrum and coccyx. In it the union is effected by an interposed substance analagous to that between the vertebræ, and is secured by ligaments anteriorly and posteriorly. The sacro-coccygeal joint is capable of flexion and extension to a considerable extent, and is the only one in the pelvis naturally admitting of motion. In certain animals, as the cow, the other articulations become relaxed about the period of parturition; and it has been surmised by some authors, but without sufficient proof, that a similar relaxation always occurs in the human female.

Before proceeding further we must observe, that the entire pelvic *case* is divided into two portions by the bony ridge or angle which, dividing the body from the alæ of the os innominatum, is denominated the ilio-pectineal line. The space above this line is termed the hypogastric cavity, or false pelvis; that below it, the true, or lesser pelvis. The hypogastric cavity possesses no bony wall anteriorly, but is bounded laterally and posteriorly by the alæ ilii and the lumbar vertebræ. Its dimensions vary much, and are of minor importance to the obstetric student; but the distance from the top of one ilium to the other, at the widest, is, in a standard pelvis, between ten and eleven inches; and that between the two antero-superior spinous processes somewhat more than nine inches.

We now come to the consideration of the true or lesser pelvis, which, from its forming the unyielding boundary of the canal through which the mature fœtus is to be transmitted, is more closely allied to our present subject. In describing and measuring this canal, three portions are usually specified: the brim, called also the superior strait or introitus; the cavity; and the outlet, or inferior strait or detroitus.

The *brim* formed by the ilio-pectineal lines and the angle of union between the sacrum and lumbar vertebræ is somewhat elliptical in shape, the regularity of the figure being interrupted behind by the projection of the promontory or base of the sacrum. The dimensions of this aperture are measured by four lines passing through its centre: the longest of these, passing from side to side, and denominated

the transverse diameter, is usually about five inches and a quarter in length; the shortest, being that drawn from the centre of the base of the sacrum to the symphysis pubis, and termed the antero-posterior, or conjugate diameter, measures in the standard female pelvis four inches and a quarter. The two remaining lines, called the oblique diameters, are those stretching from the sacro-iliac articulation on one side, to the back of the acetabulum on the other. The length of each of these is commonly five inches. By many authors the last diameter is mentioned as the longest, a mistake arising from the circumstance of its actually being so in the *recent* pelvis; the length of the transverse diameter being then somewhat diminished by the prominence of the psoæ muscles and great vessels and nerves.

The *outlet*, or inferior aperture, presents in the dry preparation an extremely irregular figure, its margin being interrupted by three deep triangular notches; viz. the two sciatic, and that between the rami of the pubes. In the recent subject, however, the two former are subtended by the sacro-sciatic ligaments, in such a manner as to give the aperture a quadrilateral character. Its dimensions are described by two lines: one, passing between the inner margins of the tubera ischii, and called the transverse diameter, averages in length four inches; the other, denominated the long, or antero-posterior diameter, is stretched between the inferior margin of the symphysis pubis and the tip of the sacrum, and measures five inches. In examining a pelvis, with the coccyx attached, it will be observed, that the distance

between the same point of the symphysis and the tip of this bone, is not more than four inches. Owing, however, to the mobility of the sacro-coccygeal joint, the space admits of being enlarged to five inches, or to the full extent of the distance between the point of the sacrum and the lower margin of the symphysis. In making these measurements it is also to be noted, that the directions of the long and short diameters of the brim and outlet are reversed; a provision of which a beautiful and satisfactory explanation will appear, when we come to examine the relative dimensions of the mature fœtus.

While considering the outlet of the pelvis, we may conveniently notice the arch of the pubis. This is much wider, and assumes more the form of an arch in the female than in the male; in the former also its rami are bevelled in such a manner as to give a direction forwards to any body passing through the canal of the pelvis. A line subtending this arch measures about three inches.

The cavity of the pelvis being more capacious than either the brim or outlet, does not require to be accurately measured; nor, from its peculiar form, would it be easy to measure it. We may remark, however, how admirably the hollow of the sacrum (for this purpose deeper in the female than in the male), is adapted for the lodgment of the bulky face of the child, while the convergence of the point of the sacrum and spines of the ischia is well calculated to second the bevelling of the rami pubis in directing the vertex forwards. The depth of the female pelvis now remains to be ascertained, and we shall find it

to differ much in different parts. At the symphysis pubis it is seldom more than one inch and a half. At the sides, from the brim to the tubera ischii it is about three inches and a half, and behind, a right line drawn from the base to the tip of the sacrum measures, generally, four and a half or five inches. From this irregularity of depth in different parts, we may easily see, that a body may be close to the outlet anteriorly, while it still has to traverse a considerable length of the back and sides of the passage.

The bearing of the pelvis on the trunk claims some attention. In the erect posture of the body, the axis of the trunk being perpendicular, there would have been constant danger of prolapsus of the viscera, if the axis of the pelvic passage had been continuous with it. This, however, is not the case; but the line representing the latter axis bisects the axis of the trunk so obliquely as to form an angle inferiorly of about thirty-five degrees. In other words, were the axis of the trunk produced downwards, it would fall, not upon the centre of the pelvic aperture, but upon the symphysis pubis.

[*Difference between the male and the female pelvis.* The general characteristics. The male pelvis is deep, narrow and conical: the sacrum being long narrow and strait. The *linea ilio-pectinea* proceeds from the sacro-iliac symphysis, nearly directly forwards, and the promontory of the sacrum projects more. The spine and tuberosity of the ischium, are larger, rougher, and project more inwards, and the pubic arch is narrower, the tuberosities which form

the base being nearer together. We have already said that the thyroid foramen is in the male oval, in the female triangular. The female pelvis is shallow, wide, and cylindrical, the sacrum shorter and more curved, its hollow of course deeper. The superior strait is round in the male, oval in the female, the inferior outlet is wide, and somewhat square in the female, narrow and triangular in the male.]

In the foregoing observations, we have, to avoid confusion, spoken of the axis of the pelvis in the ordinary sense of that term, as if it were a right line passing through the centre of the passage. No such *right* line, however, can exist; for the whole pelvis is so bent that both its brim and outlet look toward the forepart of the body; and the axis of the former, or a right line passing through its centre, would, if produced downwards, fall upon the point of the sacrum; while the axis of the outlet, if produced upwards, would strike the promontory of that bone. Hence it is obvious, that what obstetricians mean by the axis of the pelvis must be a *curved* line, passing respectively through the centres of both brim and outlet, and nearly corresponding in its curvature to that of the sacrum. The practical deductions from these facts are, that a body to get into the pelvis through the brim must pass downwards, and *backwards*; and to get out of it, at the outlet, must proceed downwards, and *forwards*.

The foregoing are the chief points of obstetric interest in a standard female pelvis. Deviations are occasionally met with, and may consist either in deformity of shape; in deficiency, or in excess of capacity.

The most usual cause of deformity of the pelvis is, doubtless, the occurrence of *rickets* during infancy, when the bones, not being possessed of sufficient firmness, are pressed from their natural positions by the weight of the trunk and counteracting resistance of the lower extremities. The same effect is said to be produced, in a similar way, by the disease called *mollities ossium*; and deformity may also, sometimes, be occasioned by fractures, or the occurrence of exostosis. The contraction of the passage from rickets generally occurs at the brim, and oftener from before backward than in the lateral direction. It, however, may exist in a great variety of forms, and occasionally is so extreme that the canal is compressed into a T-shaped slit. In some cases the capacity of the aperture will be much diminished at one side, while, at the other, little or no alteration will be observable. It is said, that in many cases the deformity will actually increase after every successive labour, and that the act of parturition, which was, perhaps, at first only difficult, may, after some repetitions, become absolutely impossible without artificial aid.

The pelvis, without being deformed, is in some instances unusually small, and should the fœtus then happen to be disproportionately large, it is obvious that the same effects must be produced, as if the passage was *morbidly* diminished in size. On the other hand, we have said, that the pelvis may deviate from the standard, in having an excessive capacity, in which case the attendant inconveniencies will be, liability to retroversion and

prolapsus of the uterus, and to sudden, unexpected delivery.*

The dimensions, and other characters just mentioned, can all be easily enough ascertained upon the dry bones, but when we come to enquire into them in the living body, we find it quite another affair. With the view of assisting the enquiry, several instruments have been invented, the most remarkable of which are—the pelvimeter of Coutouli, and the callipers of Baudelocque. The latter were to be used externally, to measure the size of the pelvis, in a way precisely similar to that in which they are employed by mechanics. The former resembled a shoemaker's rule, one limb of which was to be thrust into the vagina, and planted against the promontory of the sacrum, while the other,

* The Obstetric Museum of the College of Physicians and Surgeons, contains a pelvis, the diameters of which far exceed any that I have seen, and I am induced to put them upon record, as they are greater than those of the large pelvis spoken of by Mr. Burns, in the notes to his work on Midwifery.

SUPERIOR STRAIT.

Antero-posterior diameter,	5 inches.
Transverse do	5 inches, 9 lines.
Oblique do	5 inches, 7½ lines.

INFERIOR STRAIT.

Antero-posterior diameter,	5 inches, 6 lines.
Transverse do	5 inches, 9 lines.

This pelvis is remarkable also, for its excessive shallowness. The distance from the top of the sacrum to the apex being only 3 3-8 inches—depth of pelvis at the sides 3 inches 3 lines. It is scarcely possible to conceive of a mal-formation which would more certainly expose the woman who possessed it to all the dangers of a too large pelvis.—Ed.

moving upon a graduated rod, was to be brought into contact with the symphysis pubis, thus pointing out the measurement of the antero-posterior diameter. It is unnecessary to do more than mention those fantastic contrivances, their inefficiency and inapplicability being fully recognized by British accoucheurs.

We can, however, generally obtain useful information by the employment of the fingers alone, and a few remarks on the mode of using them will be necessary. By passing the index finger into the vagina, and carrying it upwards and backwards, we can in many cases touch the promontory of the sacrum, and if we then mark the part of the finger or edge of the hand in contact with the arch of the pubis, we can easily, by making a trifling deduction for the thickness of the symphysis and the obliquity of the finger's direction, estimate the length of the conjugate diameter. But sometimes, while this diameter is of sufficient extent, considerable contraction may exist on one or both sides of it. In such a case, a sharp angle must be formed at the back of the symphysis, and on this point we can satisfy ourselves by introducing two or three fingers into the vagina, and placing them in contact with the part; if they lie evenly, side by side, there can be no very acute angle, and consequently no remarkable diminution of capacity on either side of the conjugate diameter. By using the fingers, we are also enabled to discover any irregular ridges of bone, or tumours, that may have the effect of diminishing the capacity of the passage.

CHAPTER II.

THE FÆTUS.

WE may now advantageously turn our attention to the properties of the fœtus, so far as they relate to its passage through the pelvic canal.

While in the womb, the various parts of the child are packed together in such a manner as to occupy the least possible space, forming a mass somewhat of an oval shape. The head is flexed, so as to bring the chin upon the thorax, the arms are applied to the sides, and the forearms and hands flexed and applied, often crossing each other, to the breast; the thighs are flexed on the abdomen, and the legs upon the thighs, the feet often, like the hands, crossing each other. In this way the head forms one extremity of the oval we have mentioned, while the other is composed of the feet and nates.

The fœtus, we are to observe, is somewhat flexible in a lateral direction, very much so anteriorly, and but little posteriorly. The parts of it requiring to be particularly measured and examined, are the head, the shoulders and the breech. The first more especially demands our attention, both as being, upon the whole, most bulky and least compressible, and also as being the part which is usually first engaged in the pelvic passages.

The head of the fœtus, detached and without the

face, is described as oval, with the large extremity posteriorly. The desire of pointing out resemblances seems to be a besetting passion with anatomists; but, in truth, in this as in many other instances, the likening of the head to any known figure conveys but little information. The student, then, who desires correct notions upon the subject, must set before him a fœtal skull of the standard (or average) dimensions and shape, and carefully examine upon it the properties which I shall now endeavour to indicate.

The first circumstance that strikes us in our examination is the great mobility of the bones upon each other, owing to their incomplete ossification and the cartilaginous connection between them.

[To these separations between the bones the term suture is applied. That which passes from before backwards, between the parietal bones is called *the sagittal suture*. That which separates the parietal bones from the frontal is called *the coronal suture*, while that between the parietal bones and the occipital bone behind is *the lambdoidal suture*.]

The mobility of the bones is also increased by the prolongation of the sagittal suture through the centre of the os frontis, so as actually to divide it into two bones, and it can be produced to such an extent as to admit of the bulk of the head being considerably diminished in one of its diameters, and proportionally increased in another. The situation and yielding nature of the sutures requires to be attended to; their general direction is the same as in the adult, but the sagittal is always prolonged, as we

have mentioned, to the root of the nose : sometimes, but rarely, it passes backward into the occipital bone. At the junction of the lambdoid and sagittal sutures, owing to the non-ossification of the occipital and parietal bones, a triangular space is left, closed only by cartilage, and called the lesser or posterior fontanelle. A similar but larger space occurs between the parietal and frontal bones, at the intersection of the coronal and sagittal sutures. This is termed the greater or anterior fontanelle, and is distinguishable by being lozenge-shaped, and having four concurrent sutures, while the former is triangular, and has only three concurrent sutures. A knowledge of the differences between these fontanelles will assist us in a diagnosis of the situation of the head during labour.

We shall now enquire into the dimensions of the standard foetal head, which are usually measured by lines, somewhat loosely denominated diameters.

The shortest of these is the bi-parietal, or that stretched between the tuberosities of the parietal bones on either side, and is about three inches and a half, or three inches and a quarter in length ; this, it is plain, can meet with no obstruction in passing through any part of the *standard* pelvis, the shortest diameter of the latter being nowhere less than four inches.

There are, however, three other measurements to be considered, which, from being all in the long axis of the head, are usually called the long diameters. One or other of these, together with the bi-parietal diameter, may be considered as the measure

of the bulk of the passing body, in every head presentation.

The shortest, (called occipito frontal), and that which is most usually opposed to the long diameters of the pelvis, is described by an imaginary right line, extending from the upper part of the forehead to the lower part of the occiput. This can only become the opposing diameter when the chin is very much depressed toward the chest, as it usually is, the vertex being the presenting part. The length of this line is about four inches, which, it will be remembered, is not greater than the shortest diameter of the pelvis, but as it is naturally opposed to the longest diameters of that passage, there can, of course, be no want of room in such a case. Such, then, are the relations, as to dimensions, between the head and pelvis under the most favourable circumstances.

The next in length of the great diameters, is that between the lower part of the forehead and the upper part of the occiput, (called antero-posterior.) It usually measures four inches and a half, being about half an inch longer than the last. This comes to be the opposing diameter in that variety of head presentation in which the head is extended upon the neck and the forehead applied toward the pubis, called also the fontanelle presentation, in consequence of the anterior fontanelle being in such cases the presenting part.

The longest diameter of the head, is that between the point of the chin and the vertex. It measures five inches, and is the opposing diameter in another

variety of natural presentation, viz. when the face is the presenting part : it must be obvious that this position of the head will materially increase the difficulties of its transit.

The *depth* of the head, from the sagittal suture to the occipital foramen, may be estimated at about three inches and a quarter.

The dimensions, of course, vary in different individuals, but those we have given are about the average. The heads of female children are usually somewhat less than those of males ; Dr. Joseph Clark* estimates the difference at one twenty-eighth or one thirtieth of the circumference.

The movements of the head now claim a little attention. These are, flexion forwards and extension backwards, both, especially the former, capable of being carried to a considerable extent. Direct lateral inclination is only admitted to a slight degree, and rotation can be carried just so far as to allow of the chin resting on the shoulder, but not farther without endangering the child's safety.

We have spoken of variations from the natural form and average size of the pelvic passage, and we shall also be able to detect similar deviations from the standard in the head of the fœtus. It may, for instance, be very small, which of course will have no effect, except to facilitate its expulsion. It may, on the other hand, be very large, and if it be so, disproportionately with the size of the pelvis, difficult labour will be the consequence, and it is

* Phil. Trans. v. 76.

even possible that the use of instruments may be necessary. On this point, however, it is proper to think with caution, as the extraordinary change of shape which may be effected on the head by compression, will often suffice to counterbalance even a considerable disproportion of size.

The head is occasionally enlarged, while in the womb, by hydrocephalus, and may require diminution by means of instruments: the head of a dead fœtus is also sometimes swollen by the air disengaged during putrefaction. A peculiar form of head is not *very* rarely met with, in which the upper portion of the cranium is mal-formed, and partly deficient, and the situation of the brain occupied by a sort of fungous mass. These are denominated acephalous, or (by the Germans) cat-headed fœtuses: they may create confusion in our first examinations by wanting the peculiar firm feel of the natural head, but they are not often themselves productive of difficulty in the act of parturition.

The shoulders of the fœtus are generally about five inches in breadth, but the effect of their size is counteracted by their possessing capability of motion to such an extent, that one can precede the other in their entry into the pelvis.

From what has been said it is obvious, that the long axes of the head and shoulders decussate, or are at right angles with each other; and we can now perceive the value of a similar arrangement which we adverted to before, of the long diameters of the brim and outlet of the pelvis. At the moment when the head is escaping in the most favour-

able manner through the latter, the shoulders are accommodated in the long diameter of the former.

We have next to say a word upon the pelvic extremity of the fœtus, as it is packed in the uterus, and sometimes presents in the pelvic passage. Occasionally, the nates form the whole bulk of the presenting part; at other times the feet are assembled with them; and again, the feet or knees pass first into the world. These differences make a good deal of variation in the antero-posterior diameter of the pelvic extremity, but it is almost always less than the transverse, which pretty constantly measures four inches.

Presentation and position.—Before proceeding to the consideration of the mode in which the child is propelled through the pelvis, or, as it is called, the mechanism of parturition, we shall briefly explain the meaning we attach to two words which we shall frequently employ, and which, indeed, have been already made use of in the preceding observations. The words alluded to are, *presentation*, and *position*. By the first we wish to designate that part of the child which, during labour, may be opposite the centre of the pelvic passage; and by the second, the relative position of the child with respect to the bones of the mother's pelvis. Thus, if we say the vertex presents, we announce the presentation; and if we add, with the occiput toward the pubis, or toward the sacrum, as the case may be, we describe the position.

CHAPTER III.

MECHANISM OF PARTURITION.

WE have now to consider the modes in which nature essays to accomplish the transit of the mature fœtus through the bony canal of the pelvis, and shall find, that of these there are three grand varieties ; viz. presentations of the head ; of the breech or lower limbs ; and of the upper limbs, or side of the body.

In either of the two first varieties the fœtus presents an extremity of its long axis, and a brief consideration of the various measurements and characters described in the last chapter, will be sufficient to explain, that in ordinary cases no material obstacle to its passage can exist. In the third variety, the side of the child presenting, the long axis lies transversely to the pelvic aperture, and can only be expelled under peculiar circumstances (afterwards to be explained), to the production of which nature unassisted is rarely competent.

In a great majority of cases the head is the presenting part ; and we shall, therefore, first examine the mechanism of its transmission.

Some varieties exist as to the *position* in which the head enters the brim of the pelvis ; and of these French authors have, with their usual ingenuity, taken advantage, and confused the subject by at

least seven subdivisions. For practical purposes, however, such minuteness is unnecessary, and satisfactory notions upon the subject may be conveyed by explanations of three varieties. In the first and most common, the head enters the brim of the pelvis with the sagittal suture in the direction of either of its oblique diameters, and the posterior fontanelle applied to the back part of either *acetabulum*. In the second, the sagittal suture is still in the same direction, but the posterior fontanelle is applied to either sacro-iliac *synchondrosis*. In this variety the head occasionally, but rarely, is expelled with the face toward the pubis. In the third variety the face is the presenting part.

In the *first position*, then, the head enters the brim of the pelvis with its posterior fontanelle directed toward either acetabulum (generally to the left,) and the forehead directed toward either sacro-iliac synchondrosis (generally to the right). The presenting part, or that which we may touch most readily upon introducing a finger into the outlet of the pelvis, is the superior portion of one of the parietal bones near its tuber; consequently, the head descends obliquely into the pelvis, neither the vertex nor the sagittal suture being the lowest part, but one of the parietal bones; the right, when the posterior fontanelle is directed toward the left acetabulum, and the left when it lies toward the opposite side. By this oblique position of the head, its transverse diameter is rendered somewhat less than that which would be described by a line passing between the two parietal tuberosities, which, if the vertex was

the lowest or presenting part, would be the moving transverse diameter. During this stage of the process, the chin of the fœtus is depressed upon its chest, so as to bring the shortest of the long diameters of the head, or that between the lower part of the occiput and the upper part of the forehead, into the direction of the oblique or longest diameter of the mother's pelvis. At this time the greater fontanelle or the vertex is lower than the lesser, and being situated anteriorly, can, from the shallowness of that portion of the pelvis, be felt very near the external opening. As the head descends, the face turns somewhat into the hollow of the sacrum, and the vertex approaches the symphysis pubis. It is, however, the parietal bone which first escapes, and the vertex does not reach the anterior central line until in the very act of being expelled from the outlet. The mechanism by which this *turning* is accomplished is extremely interesting. The hollow of the sacrum is provided for the reception of the bulky face of the child, while the convergence of the point of the sacrum and spines of the ischia, and the bevelling of the inner surface of the rami pubis form so many inclined planes, upon which the round smooth cranium is guided forward under the pubic arch. The change effected at the expulsion of the head brings, at the same instant, the long diameter of the shoulders obliquely into the brim of the pelvis, thus taking advantage of the wise adaptation (already alluded to), by which the long diameters of the brim and outlet are placed at right angles with each other. The head, soon after its ex-

pulsion, is again turned with the face toward one thigh of the mother, and thereby the greatest breadth of the shoulders from side to side is brought into the direction of the long diameter of the outlet from before backwards: the rest of the body and limbs follow without difficulty.

Second position of the head.—In this, which is of much less frequent occurrence than the first position, the posterior fontanelle is directed toward either sacro-iliac synchondrosis (generally to the right,) and the forehead directed toward either acetabulum (generally to the left). The presenting part is the upper and fore part of one of the parietal bones, the head, as in the first position, descending obliquely into the pelvis. As the force of the uterus continues to act upon the head, the round and bulky vertex and tuberosity of one parietal bone are directed against the inclined plane formed by one of the spines of the ischia, and by it guided forwards toward the neighbouring acetabulum, while the less bulky but smooth forehead is, by the same motion, passed backwards towards the sacro-iliac synchondrosis of its own side. In this situation the head is expelled, the case being, in fact, converted into one of the first position. This, I believe, is the usual course; Professor Nägelè of Heidelberg observed it to occur in ninety-three out of ninety-six cases.

In some few instances, however, the vertex, instead of being directed forwards, as has been described above, is turned toward the sacrum, and the upper and fore part of one of the parietals

passes out first under the arch of the pubis, constituting a presentation with the *face to the pubis*. This is a less favourable position than the first, as the head passes, not flexed, but extended upon the trunk ; and, consequently, the moving diameter is the second longest, being that between the lower part of the forehead, and the upper part of the occiput. It is said by some, that the head occasionally presents at the brim with the forehead directly toward the pubis, and the vertex directly backwards, which, I believe, never occurs, except in the case of a very small head.

Third position, or face presentation.—In this variety the face usually enters the brim of the pelvis with the forehead toward one sacro-iliac synchondrosis (generally the left), and the chin toward the opposite acetabulum (generally the right). The presenting part, then, is the upper portion of one cheek. As the labour advances, the chin is directed under the pubic arch and passes first out of the pelvis. Occasionally, but rarely, the forehead will be, at the commencement, directed forwards toward one of the acetabula, and the chin may turn back toward the hollow of the sacrum. In one case, however, in which I distinctly ascertained this to be the situation at the commencement ; the chin was subsequently turned forwards in the manner described above as happening in the second position, and was expelled first under the pubis. In face presentations, the moving diameter of the head is its longest, being that between the chin and vertex.

Presentations of the nates and lower extremities.

—When the child is transmitted through the pelvis with its uates or lower limbs foremost, its position admits of two varieties. The first and most frequent, is with the back of the child inclined toward the abdomen of the mother; the second, with the back of the child inclined toward the sacrum of the mother. The back of the child does not, in either of these cases, look directly forward or backward; but the presentation passes into the pelvis with the breadth of the child in the line of one of the oblique diameters of the brim. When the breech is the presenting part, one of the ischia (usually the most anterior, or that nearest to the pubis) descends lower than its fellow, and first meets the finger of an examiner.

The breech is usually transmitted through the outlet with one hip directed obliquely toward the pubis, and the other toward the sacrum. The shoulders pass the brim with their breadth in the line of the oblique diameter, but, in passing the outlet, have their position changed, being then inclined, the one toward the pubis, and the other toward the sacrum: by this inclination the head is brought through the brim with the forehead towards the sacro-iliac synchondrosis, and the occiput toward the opposite acetabulum. The shoulders having been expelled, the face turns into the hollow of the sacrum, the chin is depressed toward the chest, and so escapes posteriorly; and, lastly, the vertex passes out from under the pubis.

In the second species, when the face of the child is at first inclined anteriorly, a complete turn is

most usually subsequently effected, so as to bring the face into the hollow of the sacrum, as in the first species. Sometimes, however, in these cases, the head, instead of being flexed, is extended, the occiput depressed upon the nape of the neck, and the vertex turns into the hollow of the sacrum. The chin then rests upon the pubis, and the occiput first passes out posteriorly. The above observations, with the exception of those relating to the passage of the nates, apply accurately to foot and knee presentations.

Presentations of the upper extremities, or side of the body.—In these presentations the child lies transversely across the brim of the pelvis, with its head toward one ilium, and its breech toward the other. A little consideration will show that almost insuperable obstacles oppose its passage while thus situated. In certain cases, however, in which the fœtus is very small, or rendered very pliable by putrefaction, the power of the uterus has been found sufficient to effect its expulsion. This process has been termed by Denman, who particularly noticed it, *spontaneous evolution*, and was first correctly explained by Dr. Douglas of Dublin. It is, in fact, an expulsion of the child with its body doubled together. During its accomplishment, the head rests upon one iliac fossa, the shoulder is driven forwards entirely out of the pelvis, and rises before the pubis, thus making room for the protrusion of the side of the chest into the vulva; again, as this is forced out, the side of the abdomen is pressed after, the body is very much flexed upon

itself, until, finally, the breech is, by repeated efforts, expelled over the sacrum. The head, last of all, passes out of the pelvis.

* * * In describing the mechanism employed in head presentations, *I* have adopted the opinions of Professor Nagelè, being convinced of their general correctness. The student, however, is not to be disappointed if he should find himself unable to diagnose the *exact* position of the head in any individual case. It is, in fact, often extremely difficult to do this, and, in attempting it, we are by no means warranted in inflicting any pain upon the mother. A failure is of the less consequence, as the whole tenor of the facts ascertained by the excellent observer alluded to, goes to discountenance the idea of its being ever necessary or expedient to change the position of the head.

CHAPTER IV.

ORGANS OF GENERATION.—EXTERNAL AND INTERNAL.

A VERY brief description of these parts will be required for the clear understanding of the steps and accidents of labour ; it is not, however, necessary to enter at all into their minute anatomy, with which the reader is presumed to be already sufficiently acquainted. The organs subservient to generation are divided into external and internal.

EXTERNAL ORGANS.—These consist of the mons veneris, the greater labia, the lesser labia, or nymphæ, the clitoris, the orifice of the urethra, the hymen, the carunculæ myrtiformes, the fossa navicularis, fourchette, and perineum.

The mons veneris is merely the cushion of fat and cellular substance occupying the anterior surface of the os pubis.

The greater labia descend upon each side from the mons, become thinner as they pass back toward the anus, at about an inch before which they unite together. They are formed of fat and very distensible cellular substance, and some fibres of the round ligament, and are covered internally with mucous membrane, and externally with common integument, which, like that covering the mons, is furnished with hairs and sebaceous glands. The open-

ing between the labia is termed the *vulva*, or genital fissure.

The nymphæ or *lesser labia* are two folds of mucous membrane lying within the great labia ; they are united together superiorly immediately above the clitoris, for which they form a kind of prepuce. They become narrower as they pass along the vagina, about the middle of which they are lost. Their use appears to be to increase the dilatability of the genital fissure, by unfolding during parturition.

The clitoris is placed immediately beneath the junction of the nymphæ. It is a small projecting body, having corpora cavernosa, and erector muscles, resembling those of the penis. It is endowed with great sensibility, and is capable of a degree of erection.

The orifice of the urethra is a small pit situated about three quarters of an inch below the clitoris, and immediately above the vagina ; a small fold or flap of mucous membrane sometimes projects from the under margin of the extremity of the urethra, and gives the orifice somewhat of an upward direction.

While speaking of the orifice of the urethra we may conveniently consider the mode of *introduction of the catheter*. If the operation is to be performed while the woman is in bed, she may lie upon her back, or, what is better, upon her left side, with the hips projecting over the edge of the bed. The left forefinger of the operator is then to be introduced to a short distance (about the length of the first joint) into the vagina, and carried forward to the

symphysis pubis. By this measure the urethra will be easily discovered lying between the finger and the pubis. It resembles in feel the corpus spongiosum of the male urethra, but is usually rather thicker. The finger is then to be drawn lightly forward along the urethra, until its tip sinks into the pit marking the orifice, in contact with which it is to be held. The catheter, held loosely between the right thumb and forefinger, is next to be passed along the front of the left forefinger, in a direction somewhat backwards, when it at once slips into the orifice of the urethra. The handle should then be slightly depressed, and the instrument passed on into the bladder ; during its introduction the point may catch in some of the mucous lacunæ, upon which it should of course be withdrawn a little, and passed forward with a slight variation of its direction. The urethra is from an inch to two inches long, so that in an ordinary case, where there is no disease, we should expect the urine to flow when the catheter has passed in to the distance of two inches. If it should be necessary, the operation may be performed while the patient sits upon the edge of a chair, the operator kneeling before her, and passing his hand between her thighs. In either case, exposure of the woman's person should be carefully avoided. By adopting the plan just mentioned, instead of that usually directed in books, we shall get rid of the necessity for irritating the clitoris, which, for obvious reasons, is a very considerable improvement.

The orifice of the vagina is situated immediately

beneath that of the urethra, and in the virgin is usually closed by a fold of the mucous membrane, denominated *the hymen*. This, in the natural state, has a small crescentic opening at the anterior part, through which the menses pass. Occasionally, this opening is wanting, and the membrane is cribriform, or even imperforate.

Carunculae myrtiformes.—These are three or four wartlike excrescences at the orifice of the vagina, by some supposed to be the remains of the ruptured hymen, but by others said to exist together with it.

The fossa navicularis is the name given to the hollow immediately within the posterior commissure of the vulva.

The fourchette is the point of union of the labia posteriorly.

The perineum is the space between the fourchette and anus. Its extent is from an inch to an inch and a half. It is lined internally by the mucous membrane of the vagina, and externally covered by the skin. Between these there is cellular substance, and some muscular fibres.

INTERNAL ORGANS.—These consist of the vagina, uterus, Fallopian tubes, and ovaries.

The vagina is the membranous canal leading from the vulva to the uterus. It is curved with a concavity forwards, to such an extent that its axis coincides with that portion of the curved line, already mentioned, as describing the axis of the pelvis, which describes the axis of the outlet. It is formed of dense cellular membrane, surrounded throughout by numerous nerves and vessels, and at the lower

part by muscular fibres, forming a species of sphincter. At about an inch from the orifice (which is its narrowest part), the vessels are collected into a cavernous erectile tissue, denominated the *plexus retiformis*. The internal surface is lined with mucous membrane, which, in the young subject, is arranged into transverse folds or rugæ: it has also many orifices of mucous glands. The superior extremity of the vagina passes up nearly an inch above the os uteri, before its mucous membrane is reflected upon the cervix; this reflection takes place higher behind than before, so that the posterior lip projects more into the canal than the anterior. The anterior wall is connected firmly with the urethra below; and above, by looser cellular substance, with the back of the bladder; this wall in its undisturbed state measures about three inches. The posterior wall (longer) is united to the rectum below: above, it is covered by peritoneum, which forms a cul de sac separating it from the intestine.

[This anatomical fact, that at its upper and posterior part the wall of the vagina is in immediate contact with the peritoneum, should be kept distinctly before the mind, whenever we attempt to introduce instruments, or perform any operation in the vagina.

This upper and posterior part is, so to speak, the weak spot in the canal; any injury inflicted here will, very probably, be followed by peritonitis, and any laceration at this spot, where it is very likely to happen, is almost certain death to the patient. This spot should therefore always be carefully avoided by the operator.]

The *uterus* is a flattened pyriform body, from two inches and a half to three inches in length, one inch in thickness from before, backward, and one inch and a half in breadth at its upper (broad) extremity. It is divided for the purpose of description into the fundus, which is the upper and broadest part; the cervix, or lower extremity; the body, which is that portion between the fundus and cervix; and, lastly, the os uteri or os tincæ, an opening situated at the termination of the cervix, and leading from the vagina to the cavity.

The substance of the uterus is from one third to three quarters of an inch in thickness, and is composed of a peculiar dense, greyish, fibrous tissue, containing abundance of nerves, blood-vessels, and lymphatics. Upon cutting into it, we observe that it contains numerous sinuses. The fibres of the unimpregnated uterus cannot be observed to follow any regular course: they possess all the powers, and most of the appearances, of muscle; although it is a favourite whim with certain anatomists to deny them the name.

Within the solid walls of the uterus a cavity is formed, triangular in that portion contained in the fundus, and with its lower angle prolonged into a narrow canal, which passes through the body and cervix to the os tincæ. At the upper angles on each side are situated the openings of the Fallopian tubes. The whole cavity is lined by mucous membrane, continuous with that of the vagina. In the young subject, this is arranged into folds; it has numerous mucous lacunæ, particularly in the cervix.

The os uteri is a transverse slit in the lower extremity of the cervix, varying in length from three to eight lines. It has two lips, which in the virgin are smooth, but, in persons who have had children, frequently present a tuberculated and irregular feel. In the neighbourhood of the os are situated some follicles, termed the glandulæ Nabothi, which secrete a tough sebaceous matter, and are supposed to be the seat of the cancer that occasionally attacks this part.

The situation of the uterus is near the middle of the pelvis, between the bladder and rectum, its axis coinciding with that of the brim. It is covered on both sides by peritoneum, and is held in situ by the following ligaments. The broad ligaments, which are merely folds of peritoneum passing off from the sides of the womb to the sides of the pelvic cavity. Each is formed by two layers of peritoneum, between which are situated, at the upper margin, the Fallopian tubes and ovaries, and, lower down, the vessels and nerves of the organ. The anterior and posterior ligaments are also folds of peritoneum passing off respectively upon the bladder and rectum. The round ligaments differ from any of the former. They pass off on each side from the fundus uteri, close to the insertion of the tubes, and, passing out of the abdomen through the inguinal ring, are lost upon the mons veneris and labia. They are composed of a number of blood-vessels, lymphatics, nerves, and cellular substance, and form a thick round cord. The use of these ligaments

has been much disputed. By Sir C. Bell* they have been ingeniously supposed to answer the purpose of tendons, and to furnish a fixed point for the two circular muscles, which he has described as existing at the fundus of the womb. Professor Jorg,† of Leipsic, believes that they communicate sensation from the clitoris to the Fallopian tubes and ovaries at the moment of coition, so as to establish a consent of all the parts concerned in generation.

The *Fallopian tubes* are two firm cords, about four inches in length, formed of a spongy cavernous tissue, with blood-vessels, lymphatics, nerves, and probably muscular fibres.‡ They contain a canal, which opens into the fundus of the uterus upon each side, by an opening merely large enough to contain a bristle. The canal enlarges as it runs toward the opposite free extremity, and opens into the cavity of the peritoneum, its termination being surrounded by fimbriæ, and denominated the *morsus diaboli*, (or fimbriated extremity of the Fallopian tube). The tubes lie in the upper fold of the broad ligaments in a very tortuous manner.

The *ovaries* also lie in the upper fold of the broad ligament, (or rather in a fold of the posterior layer of the ligament), behind the tubes. They are flattened whitish bodies, from an inch to an inch and a half long, resembling in appearance and feel

* Med. Chir. Trans. vol. iv.

† Handbuch der Geburstshülfe. Leipzig, 1833.

‡ The muscularity of the tubes, or at least the identity of their structure with that of the uterus, is abundantly manifest in case of tubal pregnancy.—Ed.

the male testes. In the early fœtus this resemblance is so remarkable, that we can sometimes with difficulty distinguish whether the bodies lying in the lower part of the abdomen be actually ovaria or testes. The ovaries are composed of a peculiar cellular tissue, and each contains fifteen or twenty globular cells or vesicles, including a drop of albuminous fluid, and denominated the *vesiculæ Graafianæ*. Each of these vesicles is supposed to contain an ovum, which escapes by the bursting of the peritoneal coat of the ovary at the moment of conception, leaving behind a small cicatrix. At the same period an oval glandular body is observed to be formed in the ovary, about one third of an inch in diameter, and resembling much the secretory portion of the kidney. This is named the *corpus luteum*. It continues to exist from the time of conception until three or four months after parturition, but of its uses we are nearly quite ignorant.*

In connection with the foregoing description of the hard and soft parts immediately concerned in the generative function, it may be interesting to reflect upon the effects likely to be produced upon the other organs contained in the pelvis by the changes resulting from the exercise of this function. The uterus, we have seen, is situated between the bladder and rectum, and accordingly, as might have been expected, its enlargement frequently interferes with the action of both these organs. If the pres-

* Sir E. Home supposed that corpora lutea might exist in the virgin; but his supposition is not supported by the testimony of other observers.

sure particularly affect the former viscus, it will be found to occasion frequent micturition and other symptoms of irritation : and when the part pressed upon is the urethra or neck of the bladder, retention of urine may be the consequence. In like manner, pressure upon the rectum may cause either tenesmus, or constipation, and, by interfering with the free return of the blood, produce or aggravate piles. The great blood-vessels which traverse the pelvis in their course to or from the lower extremities, as well as the numerous lymphatics, are also frequently subjected to interruption of their functions from pressure of the enlarged uterus, to which may be traced the varices and edema of the limbs so common in pregnancy. The pressure, also, upon the great nerves may satisfactorily explain the numbness and cramps of the legs frequently complained of during labour, and at the latter periods of gestation.

CHAPTER V.

FUNCTIONS OF THE GENERATIVE SYSTEM.

MENSTRUATION.—In every healthy woman, at the age of puberty, a sanguineous discharge occurs from the uterus, and returns regularly every twenty-eight days, excepting at those periods when the woman is either pregnant or giving suck. From the regularity of its return this is denominated the menses or catamenia, and, in ordinary language, “the monthly courses.” It commences in this country usually about the fourteenth or fifteenth year, and ceases between the forty-fifth and fiftieth. In warm climates, it is said, but I think upon insufficient authority, that it commences and terminates much earlier than in these countries.*

* Vide a paper by Mr. Robertson in the Ed. Med. and Surg. Journal, vol. xxxviii.

Out of 450 females Mr. Robertson found that,

10 menstruated for the first time at the age of 11 years.

19	do	do	do	do	12	do
53	do	do	do	do	13	do
85	do	do	do	do	14	do
97	do	do	do	do	15	do
76	do	do	do	do	16	do
57	do	do	do	do	17	do
26	do	do	do	do	18	do
23	do	do	do	do	19	do
4	do	do	do	do	20	do

The menstrual discharge, although sanguineous in its appearance, is not pure blood, but strictly a secretion from the uterine vessels. It differs from blood in being uncoagulable, and containing but a very small quantity of fibrine: although occasionally retained in the uterus for months, in consequence of an imperforate hymen, it has never been observed to coagulate or separate into two portions.

Pure blood may, in consequence of increased action, be poured out along with the menses, and detected by its coagulation: also, coagulable lymph, as in the false membrane of painful menstruation. The secretion may sometimes even be devoid of the usual red color.

The quantity of the menses varies considerably in different individuals, and, from the slow manner in which it escapes, is not easily estimated; the average quantity, however, in this country appears to be about four ounces. This trickles from the mouth of the uterus (as has been seen in cases of prolapsus of the organ) during a period varying from three to five days.

Age at which menstruation ceased in 77 women.

1 at the age of 35 years.				26 at the age of 50 years.			
4	do	40	do	2	do	51	do
1	do	42	do	7	do	52	do
1	do	43	do	2	do	53	do
3	do	41	do	2	do	54	do
4	do	45	do	1	do	57	do
3	do	47	do	2	do	60	do
10	do	48	do	1	do	70	do
7	do	49	do				

At the period of the first occurrence of menstruation, a remarkable change takes place in the system of the female. All the organs connected with reproduction then assume a perfect condition. The uterus and vagina enlarge ; the external organs become developed and covered with hair, and the breasts increase in size and in perfection of their glandular structure. The whole body also assumes a more characteristically female form ; and at the same time the mind ceases to take interest in the pursuits of childhood, and is more or less influenced by the passions of the adult woman.

The use of menstruation is, obviously, closely connected with the function of conception, as it is only during the menstruating period of life that the latter ever takes place.* The mode of its action, however, is little explained ; most probably it results from the internal surface of the uterus being preserved in a condition capable of secretion, the latter state being necessary to the support and development of an ovum. The causes of its periodical returns, and of the uterine excitement attending its occurrence, appear to me to be not in the remotest degree elucidated by any of the numberless theories that have been offered for its explanation. It would not, therefore, answer any practical end to enter at present into farther examination of the subject.

Conception.—This is the next function of the generative system ; and from its nature is involved

* This rule is stated too broadly, exceptions to it are every now and then met with. Conception has certainly taken place before menstruation.—ED.

in deep obscurity. At present it will be sufficient for our purpose to state simply the facts known, and indulge as little as possible in hypotheses, which must be more the product of fancy than of reason.

In all animals, and even vegetables, in which reproduction is accomplished by the formation of an ovum,* the concurrence of two distinct sets of organs appears to be required. In the lower classes of animals, and in most vegetables, these organs exist together in the same individuals, constituting, more or less, perfect hermaphrodites. In the higher animals, on the other hand, and in some plants, there is a sexual distinction; the male and female organs being developed upon different and distinct individuals. In these latter it is found that certain rudiments of the new being are prepared in the female, and even brought to a point of considerable perfection (as in birds and those animals which emit their spawn before impregnation), but yet require for their full development the stimulus of the male secretion or semen.

In the human female, the existence of these rudiments in the vesicles of the ovaries, and their passage from thence, through the tubes, to the womb, has been inferred from the following circumstances. In every instance in which an examination has been made shortly after conception, it has been observed that the contents of one or more of these vesicles had been discharged,† and that a cicatrix, marking

* The seeds of plants are perfectly analogous to ova.

† It is usually found that a drop of blood is effused into the vesicular cavity, which coagulates, and is subsequently absorbed.

the point of their exit from the ovary, existed on the peritoneal coat of that body. The formation, at the same period, of the corpus luteum in the neighbourhood of the cicatrix (although we are ignorant of its exact uses) also indicates the performance of some special action. Again, we have, in a morbid state, the occasional development of a fœtus in the ovary, forming a variety of extra-uterine fœtation. That the rudiments pass by the tubes into the uterus may be inferred from the occurrence of another example of extra-uterine fœtation, in which the ovum is arrested in its passage through the tube and partially developed in its canal. There is also analogical proof to be derived from the experiments of Dr. Haighton,* in which he completely stopped the progress of conception in a rabbit by dividing the tubes within thirty hours from the period of impregnation; but failed in effecting that object when he postponed the division to forty-eight hours from the same period.

As to the manner in which the rudiments escape from the ovary and effect their transit into the womb, we have little information. By some it is supposed that the vesicle bursts, and that its contents are absorbed by the tube in a fluid state, and so conveyed into the womb. Mr. Cruikshank's hypothesis was, that it escaped in the form of a perfect cyst; and he conceived that he demonstrated this by opening and pouring distilled vinegar upon the tube of a recently impregnated animal, whereby

* Phil Trans. vol. lxxxvii,

an egg-like cyst was rendered visible. This effect, however, might be produced by the mere coagulation of the albumen probably contained in the fluid rudiments. It is not improbable that the matter may be absorbed in a fluid form, and furnished with a cyst composed of the future amnion and chorion during its transit through the tube; in support of which conjecture we have an analogy in the addition of the shell to the ovum of birds during its passage through the oviduct.

As to the time occupied by these actions, which may be properly considered as constituting the process of *conception*, much uncertainty prevails. It may probably be set down at about a fortnight, as I believe the ovum has seldom been recognized in the uterus in less than two or three weeks from the period of impregnation.

In multiparient animals, and in the human female who conceives of more than one child, the number of cicatrices and of corpora lutea in the ovaries exactly corresponds with the number of fœtuses in the uterus.

Conception has been hitherto spoken of entirely with reference to the operations of the female; with respect to the part borne by the male, but little is ascertained with certainty. We are, in fact, quite ignorant as to the mode in which the semen effects the awakening of the ovum, which we have already seen may be brought, in some animals, to a state of apparent perfection, and expelled from the body, without its aid. It is not even certainly known whether actual contact of the male and fe-

male products is an essential requisite of impregnation, or whether this result may not be produced by a mere exhalation or *aura* proceeding from the male semen. In favour of actual contact are some observations of Ruysch, in which he says that he detected semen in the Fallopian tubes of a woman killed in the act of adultery; the experiments of Dr. Blundell;* and the analogies of vegetable fecundation, and of the generation of animals whose ova are impregnated after expulsion, in both of which, actual experiments prove the necessity of direct contact. On the other side, we have the unexplained difficulty of effecting contact, and the occasional occurrence of conception while the hymen is perfect, and an insuperable obstacle opposed to the entrance of the male organ into the vagina. Upon the whole, the weight of evidence appears to be in favour of actual contact; but where, or how effected, we know not. Such is the scanty foundation of facts upon which have been built the innumerable absurd, as well as ingenious, though fragile, theories of reproduction.

* Med. Chir. Trans. vol. x.

CHAPTER VI.

GRAVID UTERUS.

COEVAL with, and subsequently to conception, many changes take place in the womb and its contents, all of which may be included in the consideration of the gravid uterus. We shall first consider the effects of pregnancy upon the womb itself, and, for the sake of a contrast with the unimpregnated state of the organ, shall examine its size, structure, &c., at the full period of gestation.

At this time it is of an oval shape, somewhat compressed from before backwards, and with the smaller extremity pointed downwards. Its average dimensions are, twelve inches in length, nine in breadth, and six or seven in depth; these, however, varying according to the size of the fœtus and secundines, and especially to the quantity of the liquor amnii.

The steps by which it attains this size are gradual and regular. Until the end of the third month it remains within the pelvis. In the fourth it begins to mount above the brim, and then measures about five inches from the fundus to the beginning of the neck. At this period the enlargement is confined to the fundus and body; but in the fifth month the cervix begins to be distended, and becomes softer and spongy.

Until the fifth month the weight of the uterus acts in depressing it into the vagina, so that we can feel the os tincæ more readily than in the unimpregnated condition: but as the cervix becomes distended, and the uterus rises into the abdomen, the vagina becomes more elevated, and the os more distant from the finger. In the seventh month the womb reaches usually to the umbilicus, and the cervix is so much developed that we can often feel through it the head of the child. In the eighth month the fundus gets to about half way between the umbilicus and sternum, and the orifice is on a level with the brim of the pelvis. In the ninth month the upper extremity of the womb is very near the ensiform cartilage, the cervix is completely taken up into the general cavity of the uterus, and the os changed from a transverse slit into a round rugous hole, placed without any projection in the lesser extremity of the organ.

The situation of the full-sized womb is oblique, with the os directed backwards toward the sacrum, and the fundus forwards, so that its axis is nearly identical with that of the brim, being described by an imaginary right line passing from the scrobiculus cordis to the point of the sacrum,—a circumstance that requires to be understood, when it is necessary to pass the hand into the uterus.* The gravid

* In women who have had many children, this axis is often deviated from, on account of the distensible parietes of the abdomen allowing the uterus to depend forwards. Lateral obliquities also occasionally happen from unequal laxity of the parietes, or from deformities of the spine or pelvis.

womb lies anterior to all the viscera of the abdomen, occupying the whole interval between the iliac bones, and a corresponding space above as high as the epigastrium.

The structures of the uterus continue essentially the same as in the unimpregnated condition, but undergo a remarkable development. The muscular fibres, which appeared so irregular in the virgin womb, now exhibit a definite arrangement into layers. The outermost of these fibres arise from the round ligaments, and, regularly diverging, spread over the fundus until they unite. According to Sir C. Bell,* the round ligaments are the tendons of this muscle, and serve as fixed points from which it acts in bringing the womb down into the pelvis at the commencement of labour, and giving its mouth the proper direction. In the substance of the organ, internal to this layer, the muscular fibres have a circular direction near the fundus, and a longitudinal near the cervix: they are, however, interwoven together in a very intricate manner; and when they act fully, must have a very powerful effect in constringing the blood-vessels, which pass between them, and so preventing hemorrhage. Their action, during labour, is to open the os tincæ, and draw it, as it were, over the child's head. The most internal stratum of muscle is arranged with the fibres in two sets of concentric circles, each having the orifice of one of the tubes as its centre. These two mus-

* Med. Chir. Trans. vol. iv.

cles, if we may so call them, interweave together at their circumferences, and have proceeding from them, on each side, broad longitudinal bands of fibres, which assist the external muscles in bringing the fundus towards the os, and in drawing the latter over the child's head. The circular portions are supposed to corrugate and diminish in size the internal surface of the uterus, after the child has been expelled, and so draw it off, as it were, from the placenta, which, having no power of diminishing its own area, must, of course, separate from the surface to which it is attached when the latter is diminished in the way mentioned.

The thickness of the uterine parietes is nearly the same as in the unimpregnated state : in the part to which the placenta is attached, it is perhaps a little thicker.* Its substance throughout is more spongy and vascular, and has the sinuses much more developed than before conception.

The blood-vessels of the womb are much enlarged during gestation, especially in the neighbourhood of the site of the placenta, where the arteries are sometimes as large as the point of the little finger. The veins are proportionally large, and form plexuses, with very free communication. The lymphatics are also very large and numerous.

The nerves, which are derived from the hypo-

* The walls of the uterus are sometimes unequally thin in different parts ; a knowledge of which circumstance ought to make us particularly cautious when we happen to have our hand in its cavity.

gastric and spermatic plexuses of the great sympathetic, and, from the sacral pairs, are said by some (W. Hunter and F. Tiedeman) to be enlarged; a circumstance, however, that has been denied by other observers.*

Contents of the Womb.—These consist of the fœtus, liquor amnii, or waters, and the secundines; all together constituting the ovum. The secundines consist of the funis, placenta, and membranes; the latter being three in number, viz. the decidua, chorion, and amnion.

The decidua is the outermost coat of the ovum, and less properly belongs to it than to the uterus, as it is formed in the latter during the process of conception, and before the ovum has descended into its cavity. It is also to be found in the womb, in cases of extra-uterine fœtation, appearing to be, in fact, a preparation made in the organ for the lodgment of an expected but absent guest. The exact nature of this membrane has been much disputed; but it appears to be, at first, a secretion of organizable lymph, produced by the vessels of the womb while under the stimulus of conception.† It is soon supplied with vessels admitting of being injected from the uterine arteries, and then assumes the form of a dense and thick, but friable membrane. The decidua is not formed in the cervix uteri, but stretches across its upper part, so as to form a shut

* Iörg, Handbuch der Geburtshülfe.

† In texture and mode of formation it appears to resemble much the false membrane thrown out in certain inflammations, as croup, &c.

sac in the body and fundus. It also closes up the openings of the Fallopian tubes on each side.*

When the ovum passes down, it must, to get into the womb, remove from the orifice of the tube the layer which closes it, and in doing so (*probably*) forms for itself a little bag, having a neck only equal in diameter to the perforation of the tube. From the plastic nature of the decidua, we can easily believe that this bag may increase in a degree corresponding to the growth of the ovum, whilst its neck remains of its original size (that of the tube); and it is not detached from any part of the uterine surface, as some have supposed. The bag thus formed around the ovum, by the prolongation and growth of that portion of the membrane which covered the opening of the tube, is termed the *decidua reflexa*, in contradistinction to the portion adherent to the uterus, which is called the *decidua vera*. The arrangement of these two portions of the membrane resembles precisely that of the peritoneum; the decidua vera being analagous to the peritoneum lining the abdominal walls; and the reflexa, to the same membrane covering the intestines and other viscera. It is only at the commencement of pregnancy that the distinction between the deciduæ vera and reflexa can be perceived, as they

* Dr. Lee supposes that the decidua is perforated opposite each tube; but it is scarcely likely that an aperture so minute as that of the tube would be preserved in a membrane of the kind. His view also offers a great difficulty in the explanation of the formation of the decidua reflexa,—a subject already obscure enough. Vide Med. Chir. Trans. v. xvii.

both coalesce when the ovum has attained a certain size. In one situation only are the two distinct at the time of parturition, and that is where the placenta intervenes between them: the membrane (as I have ascertained by repeated dissections) splits at the edge of the placenta; that layer which was the decidua vera passing over its uterine aspect, while the reflexa is attached to its foetal surface, interposed between it and the chorion. At this period, the membranes being much condensed, and firmly adherent to the placental surface, it requires some care to demonstrate them.

The use of the decidua appears to be, in the first instance, to afford the means of establishing a connection between the ovum and the uterus: the flocculent vessels of the chorion shooting into it, and (*probably*) anastomosing with the numerous vessels which it has recently derived from the womb. If we may adopt the phraseology of germination, which seems very applicable, we may say that the decidua furnishes the light nutrient soil into which the radicles of the ovum can strike at once, and obtain for it, without difficulty, a supply of nourishing particles sufficient to enable it to elaborate its own system. Later, the decidua assists in the formation of the placenta, in a manner respecting which we shall enquire when speaking of that organ. The membrana decidua, or caduca, as its names import, has but a transitory existence, and is always cast off either along with the ovum, or subsequently to parturition.

The time at which the ovum arrives in the womb

is not exactly defined, and has been differently estimated by observers: it has not, I believe, been recognized with certainty before three weeks from the time of impregnation.* When first visible, it is simply a vesicle formed by two concentric membranes, between which and within the inner one is contained a small quantity of clear gelatinous fluid. The outer membrane is the *chorion*. It is, at first, covered with a stratum of flocculent vessels, which strike into the decidua, and are, as it were, the radicles of the ovum. In the later periods of pregnancy, it loses its shaggy appearance, and becomes thin and transparent. It is then adherent to the decidua, covers the placenta (on its inner surface), and is reflected over the cord. Its use appears to be, to contain and strengthen the other parts of the ovum, and to establish a connection with the uterus by means of the decidua.

The amnion is a thin, pellucid, but very dense membrane, contained within the chorion, and at first separated from it by the gelatinous fluid already described; but usually towards the close of pregnancy, in close contact with that envelope. It is reflected over the chorion on the placenta and cord.† Its use

* I have known a perfect ovum to be discharged from the uterus exactly seven weeks after *menstruation*. The preparation is in the museum of the medical school at Park-street. It contains an embryo and vesicula umbilicalis with amnion and shaggy chorion, and is altogether not larger than a hazel-nut.

† At the umbilicus both the chorion and amnion pass insensibly into the skin of the fœtus, and are by some supposed to be, in original formation, identical with the cutis and epidermis.

appears to be as an envelope to the embryo, and to secrete the liquor amnii. Neither of these membranes have been injected in the human subject; but their vascularity can be fully ascertained in animals, by injecting from the fetal vessels.

The liquor amnii is the fluid secreted by and contained in the amnion. It is composed of water containing small quantities of albumen, muriate of soda, and phosphate of lime. It is of a light straw colour, and has a very peculiar smell. The liquor amnii varies in quantity, at the full period of gestation, from half a pint to upwards of a quart. Its use appears to be, to furnish a medium in which the fœtus can enjoy a certain degree of motion, and at the same time be most effectually protected against external injury. It has been supposed by some to be a source of nourishment to the fœtus; but, without involving ourselves in the intricacies of this question, it will be enough to point out the absurdity of any animal being supposed capable of secreting matter for its own nourishment. Such would be the case, however, if the liquor amnii served this purpose, as it can only be produced from the fetal vessels; the amnion having no vascular connection with the mother. We shall now take a brief notice of the fœtus, the main object for which all this apparatus is constructed; and, lastly, examine its means of support while in the uterus, and the organs accessory thereto.

The Fœtus.—After the lapse of a period, not as yet certainly ascertained, the simple vesicle of early pregnancy is found, upon close inspection, to con-

tain a minute opaque body attached to its inner surface by a slender and very short filament. When first seen, this corpuscule appears curved into a semicircle, and without any distinction of parts. In a short time a distinction is evident between the head and body; but the fundamental part appears always to be the spine. In the second month, the extremities begin to bud out, as it were, from the body; and between the lower ones the spine projects somewhat in the form of a tail. At the same time the face and organs of the cavities sprout out from the concave side of the corpuscule. The eyes also appear, and subsequently the mouth, nostrils, and openings of the ears. In the course of the second and third months, the genitals are formed, but present very little difference in the different sexes, the penis and clitoris being nearly of equal size, and the testes, which remain in the abdomen until the seventh or eighth month, resembling much the ovaria. Ossification commences about the seventh or eighth week. During the third and fourth month the nose, lips, eyelids, and ears are forming, and the parietes of the abdomen are completed, so as to include the intestines, which previously formed a sort of hernia in the commencement of the funis. The extremities continue to grow in a branch-like manner, and to form at their terminations the fingers and toes. About the end of the fifth month, the foetus has nearly assumed its perfect form, and has then chiefly to increase in size. It still, however, differs considerably from the child: the testicles are in the

abdomen, the eyelids coherent, and the pupil closed by a membrane called *membrana pupillaris*.

Even at the full period, the *fœtus* differs remarkably from the child in many of its organs, and especially in those concerned in circulation. Into these differences (which are dwelt upon in every system of physiology) it will not be necessary, at present, to enter farther than merely to call to mind the peculiarities of the circulating system. It is to be recollected, that, from the want of atmospheric air, the lungs are incapable of performing their function; and, accordingly, a vicarious organ is supplied in the placenta. From this the renovated blood is sent through the umbilical vein to the inferior cava, supplying, as it passes, large branches to the liver. The portion of the umbilical vein which passes through the fissure of the liver is denominated the *ductus venosus*, and exists merely as a cord in the breathing child. From the inferior cava the blood passes in the regular course into the right auricle, and from thence part of it goes through the foramen ovale (which closes after birth) directly into the left auricle; from thence into the left ventricle, and so by the aorta into the general circulation. Another portion of the blood in the right auricle passes in the ordinary course into the right ventricle, and thence into the pulmonary artery; but as the uninflated lungs are not capable of receiving it, a passage, termed the *ductus arteriosus* (not previous after birth), conveys it into the aorta, where it joins the blood which has passed through the foramen ovale, and is distributed along with it through the

body. . From the iliac arteries, however, two branches, denominated the hypogastric, pass off upon the back of the bladder, ascend to the umbilicus, and then become the arteries of the cord : these convey a considerable portion of blood from the descending aorta back to the placenta, for the purpose of renovation. The hypogastric arteries degenerate into cords in the breathing child.

The body of the fœtus is covered with a whitish sebaceous matter, called the *vernix caseosa* ; the use of this is, probably, to protect the skin against the effects of long immersion in the liquor amnii. The average weight of the fœtus at the full period is about seven pounds ; it is sometimes, however, as much as twelve pounds : the average joint weight of twins is eleven pounds. In the gravid uterus the fœtus is packed into the smallest possible space, its chin depressed upon the breast, its legs flexed upon the thighs, and the latter upon the abdomen, and the arms crossed upon the chest, or placed with the hands upon the sides of the face.

The *funis* is composed of three vessels, the two arteries just mentioned, which bring the impure blood to the placenta, and the umbilical vein, which carries it back from that organ to the body : the vein is considerably larger than the arteries. None of these vessels send off any branches until they are entering the placenta, when the arteries anastomose by a cross branch. They do not, however, run a straight course, but are twisted spirally together, and also are tortuous, forming coils upon themselves. The substance of the cord consists of a

cellular web, filled with a gelatinous matter, called the Gelatine of Wharton, and covered firmly by the chorion and amnion. In this gelatinous tissue the vessels are imbedded, and thus very effectually preserved from injury. Owing to this provision, knots are frequently formed upon the cord, without in the least interrupting the circulation. Besides the arteries and vein, the cord contains a rudiment of the urachus and the omphalo-mesenteric vessels and vitelline pedicle, structures which shall be subsequently alluded to. The existence of nerves and lymphatics in the funis has been denied by most anatomists; but Sir Everard Home has alleged that he discovered the former by means of the microscope; and Dr. V. Fohmann,* of Luttich, asserts that he has been able to inject absorbent vessels with mercury, and that they are very numerous both in the cord and placenta. The testimony of these gentlemen has not yet, I believe, been corroborated;† and, I fear, that at least Dr. F's argument (like many an excellent one) is injured by too much proof, as he is not satisfied with stating the existence of these vessels, but proceeds to show that, except the vein and arteries, the funis contains *nothing* else but absorbents. The length of the cord varies (from six inches to four or even five feet), but is usually about two feet: it is frequently, when too long, twisted round the neck of the child.

* Zeitschrift für Physiologie, 4ter, bd. 1832.

† Since the above was written, Dr. Montgomery of Dublin has succeeded in repeating Dr. Fohmann's injection in the funis.

The placenta is the most important of all the uterine organs of the fœtus, without which neither growth nor subsistence can continue. It has various forms in different animals, but, in the human subject, is a flat circular body, about six inches in diameter, and about one inch and a half in thickness at the centre, becoming thinner toward the circumference. Usually in the centre, but sometimes at or near the edge, we find the insertion of the funis, whose vessels immediately ramify in a divergent manner upon the surface of the organ. The placenta gives to the touch a peculiar rough fleshy feel, which the student will do well to make himself familiar with, that he may be enabled to recognize it while in the uterus.

The external, or uterine, surface is covered with a thin layer of decidua, intimately connected with its substance. Under the decidua the placenta is divided into lobes, the surfaces of which have somewhat of a rough, spongy appearance; and by some it is said that there are defined openings to be observed, leading through the decidua into the substance.* Much dispute has arisen as to the connection of this surface with the uterus. Hunter supposed that large vessels passed directly from the mother into cells in the placenta. A different opinion was entertained by the Monros,† and has been lately very ably advocated by Dr. Robert Lee.

* Dr. H. Ley in Med. Gaz. vol. xii.

† Med. Essays, vol. ii.; and Essays and Observ. Phys. and Lit., vol. i.

These gentlemen deny that any connection exists between the uterus and placenta, except, perhaps, by small nutrient vessels. Later still, Dr. H. Ley* has had an opportunity of accurately examining a gravid uterus, and he corroborates the account of Hunter, which is also supported by the testimony of Professor Burns. As yet, I think, we must consider the question as unsettled, although probabilities certainly appear to be against the notion that any very large vessels pass directly between the two parts. The internal, or fœtal, surface of the placenta is not, like the other, divided into lobes, nor has it the same spongy, glandular appearance, but is formed of an immense congeries of vessels, together with cellular substance and a number of white filaments, the nature of which does not appear to be understood: it is covered by a thin layer of decidua, which is very intimately connected to it; and by the chorion and amnion.

The internal structure of the placenta has been the subject of much dispute. It can be injected freely from the vessels of the cord; and it was supposed by William Hunter that injections could also be thrown from the uterine vessels into cells in its substance. From these circumstances, and from the fact of distinct uterine and fœtal portions actually existing in the placenta of many animals, Hunter inferred, that in the human female it is also composed of two parts: the one cellular, communicating with the uterus by a direct passage of

* Med. Gaz., vol. xii.

vessels ; the other vascular, and being, in fact, the ramifications of the umbilical vessels. From the result of his injections, he inferred further, that these portions had no vascular communication. By others it has been stated, that no passage of injection can be effected from the uterine vessels into the placenta, except as the result of extravasation, and that there are no cells whatsoever in its structure, but that it is entirely composed of the foetal vessels. From the best consideration that I have been able to give the subject, this latter view certainly appears to me to be the most correct ; but I am far from thinking that the question has been ultimately set at rest. It is probable that the purposes of the *glandulae uterinae*, or maternal placenta of animals, are effected in the human womb by a peculiar development of that portion of the uterine wall to which the placenta is attached, and not by any contrivance in the substance of the latter organ. The testimony with respect to the existence of nerves and lymphatics in the placenta is the same as was mentioned in favour of the presence of the same organs in the funis, viz. Sir. E. Home and Dr. Fohmann. Dr. F. asserts that the lymphatics convey nourishing material from the mother through the cord to the iliac glands, and thence into the system of the foetus.

The uses of the placenta appear to be in some degree analogous to those of the lungs and stomach of the breathing animal. The blood passes into it from the hypogastric arteries, and, after a very free circulation through it, returns by the umbilical vein

directly to the heart. This circulation continues until respiration is established, when it ceases spontaneously, and any interruption of it, before the latter process has commenced, is immediately fatal. From these facts, we are warranted in inferring that a change necessary to life (probably oxygenisation) is produced in the placenta, although the nature of that change is obscure, and the relative properties of the blood in the umbilical arteries and veins not at all known. That the organ in question not only revivifies the blood, but also elaborates new vital fluid, thus performing a function analogous to that of the stomach, can only be inferred from the absence of any other source from whence the fœtus could obtain materials for growth and support.

With respect to the manner in which the placenta is formed, all is obscurity; but the following appears to me to be a probable conjecture. In speaking of the decidua reflexa, I have mentioned the probability of its being formed by the ovum, in its entrance into the womb, pushing before it that portion of decidua vera which covered the opening of the tube, and so forming a bag, the neck of which would remain attached to the tube, while it would itself (from its plastic nature) increase in a ratio with the increase of the ovum. In a short time this bag of decidua reflexa would be pressed against some part of the uterine wall (most probably in the vicinity of the fundus), and there meeting with a membrane exactly similar to itself (the decidua vera), a vascular union would very soon be estab-

lished. The result of this union would soon be a minute anastomosis of vessels, and a formation of membranous tissue to support them, between the two deciduæ, and, in process of time, the elaboration of a perfect placenta.

We have now disposed of the principal contents of the gravid uterus, and shall merely allude to two structures, to which great importance has been attached by some, but which, in reality, are very imperfectly understood.

The vesicula umbilicalis is a small body, not exceeding in size a small pea, which lies between the chorion and amnion, near the margin of the placenta. It is connected with the intestines of the fœtus, by a duct denominated the vitelline pedicle, which runs along the funis; and is also connected with the mesenteric vessels by an artery and vein, called the omphalo-mesenteric, which accompany the vessels of the cord through the umbilicus. The vesicle contains a small quantity of a kind of oily matter, supposed to perform a part in the early nutrition of the embryo: but the fact is, we know nothing about the matter.

Allantois.—By some persons a reticulated membrane is described as existing between the chorion and amnion, which they describe as analogous with the allantoid of brutes, and from which they say the urachus proceeds along the cord to the fundus of the bladder. By others, the existence of an allantoid in the human subject is altogether denied, and the urachus merely considered as a rudimental type of the same organ in animals. The use of the

allantoid has been generally supposed to be for a reservoir for the urine of those animals in whom it exists. Velpeau, who admits the existence of some structure of the kind in the human subject, supposes that it serves some unknown purpose in the early nutrition of the fœtus.

CHAPTER VII.

PREGNANCY—STATE OF THE GENERAL HEALTH.

PREGNANCY is always accompanied with a state of general health, having many analogies with fever. Breschet (*Etudes de l'œuf*) very truly says that the reproductive process is nearly identical with the reparative ; for nature, though multifarious in her ends is exceedingly chary of her means. Does she intend to repair any lesion ? what is the process ? Irritation, an afflux of fluids—the elimination of coagulable lymph, which takes sooner or later a form more or less dense, is organized and then adopted as part of the frame. So, in the reproductive process, the irritation, the exaltation of vitality the elimination of a coagulable fluid, and its subsequent organization,—these are the early steps. If, then, the analogy between the reproductive and the reparative processes is so strict, if both partake in nearly an equal degree of the characteristics of inflammation, it is not to be wondered at that the former, as well as the latter, is accompanied by that exaltation of the vital powers and disorder of the vital functions, which we call symptomatic fever. Such is the fact ; some of the symptoms of fever, as heat, restlessness, alternate flushes and chills, a general feeling of plethora, with an excited circulation, and a quick irritable pulse, appear in almost all

cases of pregnancy. The mind, too, is often affected, the patient becoming cross, fretful, irritable, and sometimes, exceedingly passionate. In all these respects there is a remarkable difference in different women; in the feeble, the languid, and those whose vitality is usually below par, the corporeal excitement is beneficial, they enjoy better health while pregnant than at other times; on the other hand, plethoric women suffer exceedingly from feverish symptoms. So of the mental stimulation, in some the activity of the mental faculties is increased in a marked degree, so that the dull and phlegmatic, if at all affected, are only pleasantly so, while the nervous, the hysteric and the excitable are nearly, and sometimes quite, driven mad.

Buffy blood, in pregnancy, as indicating the inflammatory state, was formerly much insisted on; that the blood was buffy during pregnancy, was an axiom in obstetrics which no one doubted or enquired about. Of late years its existence, in all or even in any large majority of cases has been denied. Montgomery says it will be found in the early months in a great majority of cases, but it is less common as pregnancy advances, and very often absent during the eighth and ninth months.

It is not, however, the presence or absence of particular and individual symptoms, that should especially attract our attention, but rather, the state of system which these indicate. The fact, that a tendency to febrile excitement is present in a degree, in all cases of pregnancy, is a principle in obstetric physiology of great practical importance,

ignorance or disregard of which is the cause of half the errors which are committed in prescribing for the diseases of pregnant woman, it is also the fruitful parent of blunders innumerable, in their regimen. How common is the notion, that because a pregnant woman has, as they say, "two to eat for," she must be fatted up like a prize ox, eat beef enough for two, and drink ale, beer, porter, or wine, enough for half a dozen! Now how absurd does all this appear in view of the physiological fact, that the patient who is thus pampered and stimulated, is all the while in a state near akin to fever.

SYMPTOMS OR SIGNS OF PREGNANCY.

Absence of the menstrual secretion is the first symptom of pregnancy to which attention is directed, it is relied upon with great confidence by the sex, with them it is *the sign*, and this confidence is shared by some of the seniors in the profession—yet it is open to many sources of error—let us attempt to appreciate with accuracy its value as a diagnostic sign of pregnancy.

First then, as a general rule, if a woman who has been regular, has the menses suddenly suppressed, if this is neither preceded nor followed by ill health, she is pregnant. This is the general rule, but there are some exceptions and besides its value as a diagnostic sign of pregnancy is diminished because in some instances the menses do not cease immediately on the occurrence of pregnancy, of this there is no doubt; for though it is vehemently denied by

Denman and also by Hamilton, we have on the affirmative side of the question, Gardien, Capuron, Montgomery, Dewees, Gouch, and a host of others. Again, pregnancy may occur during a suppression of the menses, even when that is caused by very serious disease; of this Montgomery gives a very remarkable case, the patient had disease of the heart with dropsy, and the suppression was of two years standing. Again pregnancy may occur before the menses appear, (*Sir E. Home, Frank*) or in women who never have menstruated. (*Zachias, Moriceau, Gardien, Capuron, Fodere.*)

But the great source of error on this subject is the irregularity of the function about the turn of life. Women at that time are very apt to pass one or two periods, and then have an unusually profuse discharge, even a hemorrhage—an ignorant man will here conclude that pregnancy and abortion have both taken place, and if, as is most likely, the patient pass the next term she will be put under all manner of restrictions, perhaps subjected to medical treatment, and all to prevent abortion occurring before pregnancy. Still it must not be forgotten that pregnancy does every now and then take place under these precise circumstances.

The general rule to be deduced from all these facts is, that the suppression of the menses, even when not accompanied or followed by bad health, is not to be relied on as proving pregnancy in a woman about the turn of life—we must depend on other circumstances.

Irritable bladder.—This is one of the earliest and

most constant symptoms of pregnancy. It is much relied on by Blundell. It occurs very early in pregnancy, and is not dependent on the mechanical pressure of the uterus, but upon the state of irritation common to all the pelvic organs at that time. The same thing (micturition) occurs in piles and from the same cause, sympathetic irritation.

Morning sickness.—This is a symptom less constant than you would suppose, from its being so much talked about. Some women never have it, a patient of mine had nine children and never knew what it was to be sick.* It usually appears about the third week, though sometimes earlier. It has many peculiar characteristics, as, it is usually felt on the patient's making her first attempt to assume the erect posture, it comes on suddenly and goes off as suddenly, the appetite is often good, food is taken with a relish, then sudden nausea and vomiting come on, the food is rejected with instant and complete relief. Now and then the nausea is constant, and the stomach rejects almost every thing. Morning sickness is usually most troublesome during the first half of gestation, though it may continue through the whole term, even to the very hour of parturition. Akin to the morning sickness and like it dependent on gastric irritation, is the vitiated appetite, of which so much has been said, real cases of this

* This case contradicts a wholesale assertion of Ramsbotham, who says, where nausea and vomiting are entirely absent, gestation does not proceed with its usual regularity and activity. This patient passed through nine pregnancies, all with quite the usual regularity and activity.

sort are rare, and when they do occur are usually connected with hysteria in some form or other.

Salivation is another manifestation of gastric sympathy, which we sometimes see in pregnant women. It has been thought mercurial, and the attendant blamed for giving mercury. (*Montgomery*).

Mammary irritation.—The mammary gland is usually the seat of increased action very soon after conception, marked by heat, pricking pain, a sense of distention, the breasts then enlarge, and frequently a little milk is secreted. This, like the suppression of the menses, is much relied on by the sex, as a sign of pregnancy, it is, however, of little value, being open to the following sources of fallacy :

1st. Mammary engorgement is an almost constant accompaniment of suppression of the menses, whatever may be the cause of that suppression.

2d. It often occurs immediately after marriage, from the irritation of first coition.

3d. It is often felt just before or just after a menstrual period especially if the woman have dysmenorrhœa.

4th. Enlargement of the breasts from fat may be mistaken for hypertrophy of the gland, dependent on pregnancy, the knotted, lobulated feel of the gland *ought*, however, to guard us against this error. Hypertrophy of the breasts then is not of any great value as a diagnostic sign of pregnancy.

Far different is it with the changes in the nipple and areola, to them great value always attaches, and in many cases they alone will suffice to decide the

question of pregnancy. These changes begin to manifest themselves as early as the second month, but are not perfected till the middle of the third or end of the fourth month. The part then presents the following characteristic symptoms. The nipple is of a decidedly darker colour than the skin elsewhere, varying, however, in different women, darkest in brunettes, lightest in blondes. The colour, however, is not to be relied on, especially if the woman has had children before, as it is never perfectly discharged, the nipple retaining a dark shade at all times. Besides the colour, we find the papillæ of the nipple turgid and erect, the skin soft, puffy, and moist over the nipple and areola, and a number of glandular follicles, from twelve to twenty, appear in the areola. They are turgid, project about a line from the surface, and are most numerous immediately around the nipple. The secretion from these follicles keeps the part moist, and sometimes stains the patients linen.

Such are the characteristics of the true areola, when present in any degree of perfection they render the probability of pregnancy very strong, when entirely absent pregnancy must be considered as quite out of the question.

Secretion of milk.—This is of little value as a sign of pregnancy, it is rare before the fifth month, but after that time it every now and then occurs.

Enlargement of the abdomen.—This is a sign which often excites popular suspicion, but when we come to speak of it as matter of science, it obviously only proves that something bulky is being de-

veloped in the cavity—whether this is the uterus or some other organ, further investigation must determine. Nay, even when we get so far as to prove that the enlargement is dependent on the development of the uterus, it may still remain a question whether this development result from pregnancy.

The first of these facts, viz. that the enlarged abdomen depends on the increased size of the uterus, can generally be made out by careful external examination,—to do this, place the woman on her back, the head and shoulders supported by pillows, and the thighs drawn up, then let her make a thorough expiration, and if she be not very fat, a careful manual examination of the hypogastric region will enable you to detect the fundus uteri rising like a firm, hard ball behind and above the pubis. Take care that the bladder be emptied. Having satisfied ourselves that the uterus is enlarged, the next thing is to decide, whether it contains a fœtus; this can only be satisfactorily done by vaginal examination, and ballottement, of which we shall speak further. Reliance has, by some, been placed on depression or prominence of the navel; if, say they, the navel is as deep as usual, the patient is not pregnant, if it is effaced she is. Neither of these affirmations are true—the navel is often effaced, the woman not being pregnant, and vice versa, it is deep when pregnancy does exist. A case of this latter kind occurred in New York recently, two obstetricians were deceived by relying too much on this sign.

Quickening.—It was formerly thought that the motions of the child were always felt immediately

after the rising of the uterus out of the pelvis, but it is now known that these two things have no necessary connection, when the womb rises, as it now and then does, suddenly out of the pelvis, the change is accompanied with certain nervous feelings, faintness, a sense of fluttering, &c., but this may, or may not be followed by that perception of the motions of the child, to which the term quickening, or "*feeling life*" should be restricted; cases are recorded where the uterine tumour was quite obvious above the pubis, some time before motion was felt.

The time of quickening varies, not only in different women, but in the same women in different pregnancies. It may occur so early as the twelfth week, or be delayed to the sixth month. As a sign of pregnancy it has some value, but I believe that *undue* reliance upon this symptom, has been the cause of more blunders in the diagnosis of pregnancy, than any other thing—as a sign of pregnancy, then, let us try to appreciate its true value.—The motions of the fœtus are perceptible to the patient, and they may be felt by the accoucheur; we have, therefore, two distinct sources of evidence—the testimony of the patient, and our own sensations. As to the first, its value is but small; even if she have no desire to deceive, (and women sometimes have motives which we little suspect), abundant experience proves that, not only the woman who has never felt it, but also she, to whom in previous pregnancies it is perfectly familiar, may be entirely mistaken, and suppose she "*feels life*" when there is no life to feel. The evidence of the patient, then, is

nothing worth—no prudent man will rely on it. But these motions are perceptible to the hand of the accoucheur, here, surely, there can be no mistake; any one who has felt the convulsive start which the fœtus in utero gives, cannot be mistaken about it. This would seem so, and yet mistakes have been made. Dewees, with a candour which does him infinite honour, confesses that he was deceived in one instance. The best way to detect these motions is to apply the hand, previously made cold by dipping it in water, or rubbing it with eau de Cologne, suddenly upon the centre of the hypogastric region, the child will give a start, often striking against the hand, this blow will, of course, be stronger and more easily perceived, the further pregnancy has advanced.

Auscultatory evidence.—For the first idea of applying auscultation to the investigation of pregnancy we are indebted to Mayer of Geneva. By applying the ear or the stethoscope to the uterine region of a pregnant woman, two sounds may generally be recognized; one a cooing, rushing sound, like that made by blowing over the neck of a vial; it is synchronous with the pulse of the mother, this was called, by M. Kergaradec, *bruit placentaire*. It is most frequently heard on the anterior lateral portion of the tumour, oftenest on the right side, (*Montgomery*), left, (*Dubois*). It varies exceedingly in intensity in different cases, and in the same case from day to day, is often detected with difficulty, and in some cases it has not been found at all, even by practiced auscultators. Some writers claim

to have detected it so early as the tenth or twelfth week, (*Evory Kennedy, M. De Lens,*) usually it cannot be made out before the fifteenth, and often not till the twentieth week, it becomes more distinct as gestation advances. It is always diminished, and often entirely suspended by uterine contraction.

The cause of this sound is still matter of doubt; it was supposed by Kergaradec to proceed from the placenta, and to indicate the situation of that body, this is now disputed. Kergaradec in proof of its depending on the placenta, asserted that it was heard loudest at one spot, and that at this spot it would always be heard afterwards, if heard at all; further observation has not confirmed this. Laennec thought it proceeded from the uterine arteries going to the placenta, Kennedy inclines to this opinion. Bouillaud asserts that it has no connection with the placenta, but comes from the iliac arteries compressed by the gravid uterus. The prevailing opinion now is, that the so called *bruit placentaire* is nothing more than an arterial *bruit de soufflet*, or bellows sound, caused by the blood passing through an obstructed artery. This obstructed artery may be in the uterus, or in some other organ or viscus, an ovarian tumour, for instance; even if the artery be uterine, we have still to decide whether its augmented calibre depends on pregnancy, or on some other cause, and when we are sure that pregnancy exists, the so called *bruit placentaire*, indicates the position of the placenta, only so far that we know that the largest branches of the uterine arteries are there. That the placental circulation proper has

nothing to do with the production of this sound is proved by the facts that it is sometimes audible after the placenta has been expelled and also after the death of the fœtus, (*Dubois*).

But we may have this *bruit de soufflet* in the hypogastric region when pregnancy does not exist, all that is necessary to its production is the existence of a large artery so near the surface that it may be compressed by the stethoscope. *Montgomery* and *Churchill* both detected very distinct *bruit de soufflet* in a case where pregnancy did not exist, it came from an artery on the side of a large pelvic tumour. The *bruit placentaire*, then, is of no great value as a diagnostic sign of pregnancy, it is not always to be detected when pregnancy exists, and it may be very distinct and yet the patient be not pregnant.

The second sound which we hear when auscultating the uterus, is the fœtal heart sound, this very exactly resembles the ticking of a small watch, it varies in rapidity from 120 to 160 strokes in a minute. Its rapidity distinguishes it from the pulse of the mother, and its character is quite different from that of any sound we are likely to hear in the abdomen, it is not at all likely to be mistaken for anything else. Here then we have a nearly perfect diagnostic sign of pregnancy; by it we learn not only that pregnancy exists but that the child is living; nay more, we can in many cases ascertain the presence of twins in the uterus, for if the heart sound is heard with nearly equal distinctness in two opposite regions of the uterus, and it is not audible

at an intermediate point, we may say with confidence that the woman carries twins.

Rules for practising obstetric auscultation. 1st. Never auscultate a woman who is not supposed to be at least four and a half months advanced in pregnancy.

2d. If you are in the habit of using the stethoscope, you may depend on it, if not the naked ear is better.

3d. See that the bladder and the bowels are empty: even flatus distending the intestines will interfere with your trial.

4th. Place the patient in bed, the shoulders supported, the thighs bent, press the stethoscope firmly down upon the uterine tumour, kneading away the fat if there is much in the abdominal walls. Kneel down and apply the ear, do not bend over, or bend your head down. The spot first examined should be half way between the navel and the left superior iliac spine, here the sound is most frequently heard. If, after careful and somewhat prolonged listening it is not heard, remove the instrument to some other point, and if there unsuccessful, try another and another, till the whole uterine tumour is explored. If after all the sound is not heard, the examination should be repeated another day; one who has acquired that experience, which all men may acquire by taking advantage of the cases of undoubted pregnancy that come in their way, will rarely fail to detect the heart sound after two or three patient trials, if pregnancy does exist, and has advanced beyond the fifth month. Once heard, pregnancy is certain.

State of the os and cervix uteri.—It has been already shown that, about the fifth or sixth months, considerable changes take place in the cervix ; and accordingly it is about this period that we derive the most certain information from an internal examination. This part of the womb, not being distended by the ovum during the first months, is pressed downwards by the increased weight of the fundus, and then projects rather more than usual into the vagina ; but, at the termination of the fifth month, begins to be taken up into the general cavity, and, therefore, becomes shorter and less prominent. The cervix continues to be shortened, until, at the ninth month, its canal is completely merged in the general cavity of the uterus ; and we then have no projection whatever, but merely feel the os uteri as a rugous circular opening in the lower extremity of the womb, the wall of which is spread evenly over the head of the child. From the first periods of gestation, the os uteri itself undergoes certain changes : it appears to become the seat of a more active circulation, losing its former gristly elastic feel, and becoming softer and more spongy. During the first five months it is easily felt ; but, according as the cervix shortens, and the fundus leans more forward against the anterior walls of the abdomen, it is inclined more backwards and upwards towards the promontory of the sacrum, and at the termination of the ninth month is often out of reach of the finger. That the tumour felt in the abdomen is identical with that felt per vaginam, we may satisfy ourselves by placing one hand on the

abdomen, and ascertaining that motion is communicable from it to the fingers of the other hand pressing against the os and cervix. This sensation, however, might be occasioned by a uterus morbidly enlarged, or one which contained other substances besides an ovum, as, for example, hydatids; and to obviate such a deception, the mode of examination called by the French *ballotement* has been devised. To perform this we must introduce one or two fingers per vaginam, the woman being in an upright posture; and while the other hand upon the abdomen presses down the womb, we tap quickly against the cervix, so as to jerk up the head of the fœtus, which floats for a second or two in the liquor amnii, and then falls lightly on the finger. If this circumstance occurs, it is, of course, proof positive of the existence of a fœtus; but it is not always that we can succeed in the trial.

From all that has been said respecting the individual signs of pregnancy, it must be obvious that none of them singly afford means for a certain diagnosis. The most important information is certainly to be derived from internal examination, and from the employment of auscultation; but even these do not always furnish conclusive evidence, and it is only from a careful enquiry into all the marks, and a collation of them with each other, that we can usually be warranted in giving a decisive opinion, either negatively or affirmatively. In many cases, also, the difficulties in the way of the practitioner will be much enhanced by the existence, at the same time, of pregnancy and disease, (for ex-

ample, ascites or morbid tumours,) he will then, perhaps, have at once to deal with both positive and negative signs, and should never give an opinion without the most patient, and, if necessary, protracted, consideration.

Duration of pregnancy.—It is very difficult to come to *perfectly* exact conclusions as to the duration of pregnancy, but the most generally received notion, and which I believe to be very correct, assigns nine calender months, or between 39 and 40 weeks, as the term. It is not improbable that, occasionally, labour may occur a day or two earlier or later; but there is no perfect certainty upon the subject.

Reckoning, or the computation of the duration of pregnancy, is kept in three ways. First, from the period of conception, which, if known, leads to the most accurate results; but, of course, can only be ascertained under very peculiar circumstances. Secondly, from the cessation of the menses, which is subject to a trifling inaccuracy, as the woman may have conceived immediately after the last menstruation, or immediately before the next period. For this debateable time, they usually allow two weeks, and so reckon upon being delivered 42 weeks from their last menstruation. Thirdly, women frequently check the last mode of reckoning by the period of their quickening, which they generally calculate to occur 24 weeks before labour.

DISEASES OF PREGNANCY.

Most of the diseases of pregnancy are but aggravations of the ordinary symptoms, any one of which may be so in excess as to constitute a truly diseased state.

Nausea.—This is sometimes so severe and so protracted as to destroy the comfort, endanger the health and even to put an end to the life of the patient; in the severest cases the patient has usually some respite, but now and then the distress is constant, day and night; food is rejected the moment it is swallowed, and it is only by taking advantage of an occasional lull that any thing can be kept on the stomach. Nausea is usually aggravated by improper food, by constipation, and by the presence of sores in the stomach or bowels. If either of these causes are suspected they should be removed. If this does not mitigate the vomiting, we resort to various means of checking gastric irritability. If the tongue is red and the pulse excited, bleeding, or leeches to the epigastrium will do good (*Burns*). If there are no such indications for depletion, we must, as Desormeaux observes, adopt a practice nearly empirical, trying first one thing, and then another. The effervescing draught, simple, or with laudanum, or a bitter infusion, will often do good, strong coffee will benefit those who are accustomed to it, mint tea, or iced water may be tried. Opium given by the mouth or per anum, will often do good after bleeding. In neither way must this

remedy be continued for a long time. A safe way of using it is dipping a bit of lint in laudanum, and applying it to the epigastric region. Counterirritation at this point, by blisters or mustard plaster, will often succeed for a time. If acidity be present, charcoal, (10 grains in a little milk), or some alkali, should be tried. If nothing alleviate the nausea, and, as has happened, though very rarely, the patient's life is in danger, resort should be had to premature delivery. Nutritive enemata ought to be tried in such cases. It is worthy of remark, that the vomiting consequent on morning sickness very rarely produces abortion, though that effect has not unfrequently resulted from the use of emetics.

Heart burn, or cardialgia.—This is very common in pregnancy. Bitter infusions, with alkalis, effervescing mixture with excess of soda, lime water, liquor potassæ, may be tried. I have given sub. carb. soda, in pills (5 or 6 grains after each meal) with advantage. I think it does better than the solution, why, I know not. Dewees praises the infusion of cloves, Baillie the mineral acids, others the vegetable. A favourite prescription of Dr. Sims, of which I think highly is

R. Aq. ammoniæ, ʒi.
Magnesia calc., ʒi.
Aq. cinnamon, ʒi.

—pura, ʒv. M. Cochl. max pro dos.

Constipation.—This is exceedingly common, especially during the first months of gestation. The means used for its removal should be mild laxatives, and bland enemata. Magnesia and rhubarb, or

castor oil in small doses, answer a good purpose. If the bowels are neglected early in pregnancy fœces may accumulate in the colon and rectum, causing great irritation, interfering with digestion, aggravating nausea, and, perhaps, by the straining efforts the woman makes to get rid of them, causing abortion. If they remain till labour sets in the mass in the rectum may oppose a serious obstacle to its progress. When such accumulation is suspected (and it can always be ascertained by vaginal examination) means should be taken at once to remove it. A purgative, such as Dinner pill, rhubarb, or a full dose of castor oil, should be taken at bed time, and a large enema of soap suds or salt and water, administered early in the morning. If this does not succeed (it may be repeated once or twice), we must break the mass down by the finger, or the handle of a spoon. One way or another it should always be got rid of. Extr. Hyosciani, and extr. Colocynth, aa ʒi. mft. pil. No. xv, two a dose, makes a good laxative. Hyosciamus and aloes is a favourite with Burns. The diet should be laxative, fruit, vegetables, veal, &c. A great deal can be accomplished by attention to diet in these cases, both in preventing and removing constipation and its effects.

Diarrhœa.—This is every now and then observed, though more rare than constipation. In fact, very many of these cases are consequent upon constipation; the accumulated, and long retained fœculent matter, acting as an irritant, and exciting the intestinal mucous membrane to excessive secretion, and the muscular coat to inordinate activity. Un-

der these circumstances relief can be obtained only by a *free* evacuation of the alimentary canal. Where nothing of this sort is suspected the diarrhoea is to be treated on general principles.

Salivation.—When this is excessive, and the patient's strength failing, it should be checked, and may be without danger, though the contrary is asserted by Baudeloque, and other French writers. Attention to the state of the stomach is very important in such cases, after this has been regulated, local astringents may be used, as infus. sumac, (Fahnostoch), turpentine julap, (*Geddings*). Blisters behind the ears do good in some cases.

Plethora.—We have already said that a certain degree of vascular plethora and activity, is normal in pregnancy, especially in the first months, and should not be interfered with. To bleed merely because a woman is pregnant was once a fashion in medicine, but fortunately it is now nearly exploded. Where plethora does not exist it is absurd, and even if there is a degree of vascular excitement and fullness, we should satisfy ourselves that it has passed the normal standard, and has produced or is aggravating some disease, before we interfere with it. This rule applies only to the first half of pregnancy; towards the close plethora is less common and more injurious, in fact, women generally do best when they fall in labour with the system a little below par, and efforts may well be made to bring them into this state by low diet, laxative food and even small bleedings. To low diet and laxatives, rather than to bleedings, will the judicious prac-

itioner resort to remove plethora at any stage of gestation.

Among the diseases caused by plethora, we have, *Headache*.—This form must be distinguished from the sick headache, which every now and then attends the nausea of pregnant women, and also from the nervous headache, presently to be spoken of; it occurs most frequently after the sixth month, is attended by fullness, and throbbing of the temporal arteries, ringing in the ears, suffused eyes, flashes of light before the eyes, indistinct vision, &c. If these symptoms are attended with splitting headache, apoplexy, or puerperal convulsions are to be apprehended, and instant means should be taken to remove plethora. Bleeding, not to the same extent, which would be safe if the woman were not pregnant, but to 12 or 16 ounces, leeches to the temples, cold to the head, a cooling purgative, and low diet, are the proper means to combat these alarming symptoms.

Piles, varicose veins, and œdema of the legs.—These all depend on obstructed circulation, and can only be palliated by the horizontal posture, and other ordinary means. The excision of hemorrhoidal tumours during pregnancy, is dangerous and improper.

Palpitation of the heart, and syncope.—Both these disorders of the circulatory system are met with in pregnancy. Delicate, nervous, and hysterical women are most apt to suffer from them. Such persons should take great care to avoid the exciting causes on which these disorders depend; these are,

mental agitation, fatigue, long fasting, &c. ; it may also be proper to invigorate the system by generous diet, tonics and exercise. Antispasmodics are sometimes useful, the ammoniated tincture of valerian is among the best. Opium, and the other narcotics afford present ease, but it is purchased at the expense of much future suffering. Their use is pretty certain to impair the digestive powers, and I think when long continued they do sometimes destroy the child. In every case of repeated syncope the state of the heart should be most carefully scrutinized, as if organic disease be found there the prognosis is very grave, life is often terminated in one of the attacks.

Disorders of the nervous system. Nervous headache.—This, especially if it take the form of hemicrania, is one of the most unmanageable of the diseases of pregnancy. It is sometimes paroxysmal, and often confined to one small spot. If the state of the system indicate bleeding, it will commonly do good, local, should be preferred to general bleeding. If this is not indicated, we should first attend to the secretions ; when these are corrected antispasmodics, and anodynes come in well. Hyosciamus and camphor, a grain each, is a good remedy also the vol. tr. of valerian. The external application of some anodyne extract, as stramonium, belladonna, or cicuta may be tried, but with caution, lest they produce the poisonous effects of the drugs.

Odontalgia.—"Breeding with a toothache" is so common that it has passed into a proverb. The ordinary means, as creosote, the essential oils, opium,

may be tried. If they fail, the woman had better bear the pain than run the risk of abortion from the tooth being pulled. The extraction of a large tooth is pretty certain to produce abortion.

Insomnia.—A degree of sleeplessness is not uncommon, it most frequently affects the weak, nervous, and irritable, occurring sometimes early in pregnancy, oftener towards the end of the term. If the want of sleep continue for many days, it is commonly followed by very grave symptoms, as restlessness, fever, mental disturbance, convulsions, &c. Abortion has resulted from it, and some cases have terminated in insanity, others have destroyed life. *Treatment.*—If plethora exist a small bleeding will do good; a cooling purgative is almost always proper; pediluvia, or what is better, hip baths, very often do good. The diet should be cooling, and exercise in the open air taken as freely as circumstances will permit. Anodynes should not be given too freely, one of the best is hyosciamus and camphor. The hop pillow will *amuse the patient*, and, perhaps do good.

Disorders of the respiratory system. Dyspnœa and cough.—Towards the close of pregnancy the uterus occupies so much of the abdominal cavity that the descent of the diaphragm is impeded, and dyspnœa or constant cough sometimes result. The dyspnœa is not of much consequence, though now and then troublesome, but the cough is much more important. It is frequently violent, and nearly incessant, and when it is so it will, if not checked, produce abortion in very many cases. If the

strength of the patient will admit of it, a small bleeding will be advantageous as the first remedy; afterwards the bowels should be emptied, and the secretions, if vitiated, corrected; for this purpose blue pill, followed by rhubarb and magnesia, should be given. When the secretions are normal anodynes may be used *liberally*. The diet should be carefully regulated, arrow root, barley and rice are the best articles. A good deal can be gained by confining the patient to one article, this, besides facilitating digestion, is the most effectual way of guarding against her taking too much food.

Mastodynia.—Women suffer most from this cause in their first pregnancies. Where the suffering is great, fomentations or anodyne linaments will be proper. If there is much inflammation a leech or two may be applied, but putting on a dozen, as some authors advise, I have known followed by dangerous hemorrhage—the flow from the bite is, in fact, always checked with difficulty, from the very great vascular activity of the part.

Incontinence of urine.—This is very common towards the close of pregnancy—it admits of no remedy. The old women say that it presages a good labour, and they are probably right.

Puritus pudendi.—This is an exceedingly distressing complaint, to which pregnant women are liable, though it is not confined to them. It is often so violent as to set decency at defiance. We are indebted to Dr. Dewees both for an accurate account of the pathology of this disease, and the suggestion of a very useful remedy. Examining a

case of this sort, by the eye, he found the vulva covered with apthæ. This suggested the use of borax, so useful in apthæ of the mouth, the remedy succeeded to a charm.

It will cure very many of these cases, probably all in which apthæ exist; where they do not, dry calomel sometimes will succeed. If there is heat and swelling, leeches are proper. Balsam capaiba cured one in Dewees' hands. Attention to cleanliness is all important.

False pains.—Towards the close of pregnancy many, perhaps most women, are more or less troubled by false pains. They may occur at any time after the sixth month, but are most common at the end of the eighth, and during the ninth. They are called false, as having no connection with labour. It is not always easy to distinguish between false and true pains. The history of the case, and the time of the attack will assist us. False pains are rarely as regular as the true, and very generally they produce no effect on the os uteri, though now and then they do. They are rarely attended by any *show*. They can often be referred to some accident, or act of imprudence, as lifting, straining, a long walk, jumping out of bed, standing on the cold floor, &c. These circumstances facilitate the diagnosis.

Treatment.—Anodynes, though apparently so obviously indicated, should not be given till the first passages are well cleansed, and the secretions regulated, by rhubarb and soda, senna confection, or the blue pill and rhubarb, then, morphia, hyosciamus and

camphor, or other anodynes may be tried. Rubbing the belly with sweet oil and laudamm is good practice.

Influence of pregnancy on the susceptibility to diseased action, and the development and progress of disease.—Upon all these subjects facts are wanting. As a general rule, pregnancy exercises a protecting influence against epidemics. To this rule, however, there are exceptions, and the exact reverse is said to have obtained in some epidemics.

The influence of pregnancy on most acute disease is so very unfavourable, that it is an aphorism of Hippocrates, that pregnant women attacked by acute disease, always die, (*Aphorism 30, lib. 5*). The danger in such cases, is not only from febrile state, and the extreme irritability of the nervous system, but also because the disease very frequently destroys the fœtus, and then the dangers of abortion are added to those of the existing affection. The life of the child is endangered also by the treatment necessary for the cure; especially is this true of harsh purgatives, violent emetics, salivation, and profuse bleedings.

The practical lesson to be drawn from these facts, as to the treatment of acute diseases of pregnant women, is one of caution and care. Watch the first symptoms of febrile disease, meet them in the outset with decided, but not violent remedies, above all, be strict in your attention to regimen.

It is by the prompt use of mild means, and a persevering attention to small matters, that the patient is to be conducted through the dangers that encom-

pass her. Above all, avoid the dreadful blunder of treating a woman for acute disease, without discovering that she is pregnant.

On chronic disease the influence of pregnancy is not so marked, nor is it always unfavourable. In some cases pregnancy suspends the progress of a chronic disease; and in a few it absolutely seems to exert a curative influence. Phthisis is occasionally checked by pregnancy; but it generally makes more rapid progress after delivery. It is not always even temporarily suspended, but goes on as rapidly during gestation as at other times. It is a curious fact, that this disease very rarely, if ever, produces abortion. nor indeed, does it interfere with the perfect nutrition of the child.

Regimen of pregnant women.—This is a most important subject, but physicians are not as frequently consulted about it, as they might be with advantage, perhaps because when consulted they make light of it.

Diet.—This should be light, not very nutritious, and rather laxative. Nature in most cases points out this course, the appetite is for fruits, vegetables, and the lighter meats, while gross food, as goose, pork, fat, &c., are loathsome. Follow here the dictates of nature, let the patient take vegetables, and especially fruits, freely, and abstain from gross articles, from highly seasoned meats, and from stimulating drinks. These rules are most appropriate for the first four months; after quickening, when the digestion improves, a rather more nutritious may be allowed, but as the patient approaches the term

of her gestation, the diet should again be light. Dr. Delafield, my predecessor in the professorship of obstetrics, gives it as the result of his experience, that women generally do best, when before they fall in labour, the system is reduced to a little below par. For this purpose he lowers the diet, and gives occasional laxatives during the ninth month. This as has been said before is excellent practice. Articles likely to produce flatulency are to be avoided at this time.

Influence of the atmosphere on pregnancy.—This is well established; cold, rainy weather, and low, damp, miasmatic localities, have been recognized since the time of Hippocrates, as disturbing pregnancy and causing abortion. To the influence of the atmosphere is to be attributed the frequency of abortion, miscarriage, or other mishap in pregnancy, by which some years are signalized. Miasm is, probably, the unsuspected cause of many abortions, and when this unpleasant accident recurs frequently to a woman residing in a low, damp, or miasmatic district, she should remove during pregnancy.

Exercise.—This should be strongly insisted on; none of the means of preserving the health of pregnant women are more valuable than this. It should always be taken in the open air, and carried so far as to produce fatigue, but not absolute exhaustion. As to the kind of exercise, walking is best, riding in an open carriage will do well; horseback exercise is not to be permitted, unless the patient be very well accustomed to it, ride well, and have a gentle horse.

Nothing is so likely to overcome the persistent

insomnia, with which some women are troubled towards the close of pregnancy, as exercise in the open air, carried to fatigue ; this, with the warm bath, will do more than all the anodynes you can give.

Dress.—The great thing to be avoided is tightness. Anything that compresses the body, and obstructs circulation, does harm. Inflammation of the mammæ is sometimes excited by the exposure of the part to cold, in consequence of the dress being too low. This should be avoided, and the patient induced to dress *decently*.

Pregnant women should never be allowed to witness any scene that will be likely, very powerfully to excite, or alarm, or distress them—the evil influence of such impressions is well established. Even the more exciting pleasures of life, they should partake of but sparingly, as balls, parties, theatrical exhibitions, &c.

CHAPTER VIII.

NATURAL LABOUR.

FROM the sketch which has been given of the anatomy and physiology of the gravid uterus, it must be obvious that the separation from that organ of the foreign substances (so to speak) contained within it, will involve a difficult and elaborate process. Mere expulsion of these substances, however, is not all that is required; provision must be further made for a perfect restoration of the parts concerned in gestation, to their ordinary unimpregnated condition. These two purposes are effected chiefly by a series of involuntary contractile efforts taking place in the muscular fibres of the uterus, assisted by voluntary action of the abdominal muscles and diaphragm, and by a *disposition* to dilate, which simultaneously occurs, in the birth passages. In natural parturition, the uterus, by contractions frequently repeated, separates the attachment between its own walls and the ovum, and completely expels the latter; at the same time, its fibres constrict the large vessels which pass between them, so effectually, as often to prevent the escape of even a drop of blood. Finally, by a quiet continuance of the contracting process, the organ is in no very long time reduced to its natural size and condition. The contractions of the uterine

fibres are invariably attended with suffering to the woman, and have thence been called "*pains*;" the whole process, from its difficulty, and the muscular exertions required in it, has been appropriately termed "*labour*."

The determining cause of natural labour cannot be explained; it appears as if the ovum possessed a power of existence within the uterus for a definite period, at the expiration of which it becomes to the latter as a foreign body. This, however, is merely a form of speech, as we are ignorant of the changes which cause it constantly to become a stimulant to the uterine walls at the termination of nine months: all we know is, that at this precise period gestation is completed and labour begins.

Every author upon midwifery adopts a division of the subject of labour, and definitions suitable to his own views; but, as I am not aware that one of these is much more practical than another, I shall content myself with those of Dr. Denman, which possess the merit of simplicity, and of being at the same time sufficiently comprehensive: we shall, then, consider all the phenomena of parturition, regular and irregular, under the heads of *natural*, *difficult*, *preternatural*, and *anomalous* labours.*

Natural labour Dr. Denman defines to be, "one in which the head of the child presents, which is completed in twenty-four hours, and requires no artificial assistance." Professor Burns adds, the condition of labour not occurring until the full period

* Vide Appendix, A.

of gestation. Mauriceau requires that the child should be alive; and Drs. Cooper and Power restrict the time for a natural labour, the former to twelve, and the latter to six, hours.*

Premonitory signs of labour.—Some days before the commencement of labour, a remarkable subsidence of the abdomen and diminution in the size of the woman ordinarily takes place. This is occasioned partly by the sinking of the cervix uteri (with its contents) into the brim of the pelvis, and partly, perhaps, by the gradual closure of the uterine walls, previous to their taking on active contractile efforts. It is a favourable occurrence, as it indicates room in the pelvis, and a disposition to act upon the part of the uterus. About the same time, the woman becomes restless and anxious; if her bladder or rectum be irritable, she perhaps suffers from strangury or tenesmus in a greater or lesser degree; an increased mucous discharge takes place from the vagina, and she may have flying pains and stitches through the loins and abdomen. This is a common course, but in some instances labour begins at once, without any warning whatsoever.

* In 839 cases of labour, which occurred in the Wellesley Institution, 347 terminated in			
		-	6 hours.
300	do	-	12 hours.
87	do	-	18 hours.
59	do	-	24 hours.
37	do	-	48 hours.
3	do	-	56 hours.
5	do	-	60 hours.
1	do	-	72 hours.

The suffering from labour pains is usually referred to the back and loins, whence it shoots round to the upper part of the thighs; or at first, perhaps, it commences in the lower region of the abdomen, and darts backward to the loins through the cervix of the uterus. True pains recur with perfect regularity, the interval between any two of them being equal, or gradually and regularly diminishing as labour advances.* If we place our finger upon the os uteri during a true pain, we find that it is dilated in some degree, more or less, according to the strength of the uterine action; and when the dilatation has somewhat advanced, the membranes can at the same time be distinguished pressing into the opening.

A marked difference exists in the character of the pains, according to the period of the labour: at first their operation is chiefly to dilate the os uteri, and for this purpose the uterine fibres are themselves sufficient; accordingly there is no voluntary muscular action. From the peculiar suffering which these pains occasion, they are termed "grinding" or "cutting" pains, and during their occurrence, the woman usually expresses her sensations by shrill, acute cries. When the os tincæ has been dilated to a certain extent, the pains (which are then termed "bearing,") are accompanied by a strong expulsive effort, and to render this more effective, the woman

* The interval between pains may vary in different cases from one minute to thirty or forty, according to the activity of the uterus.

instinctively brings her abdominal muscles into powerful action. In accomplishing this, she must hold in her breath, and of course can utter no complaint, until the termination of the pain, when she gives vent to her suffering by a deep, protracted groan. An experienced ear will often receive accurate information, as to the state of the labour, from the character of the cries ; but, in many cases, no expression of suffering will escape the patient until the moment at which the head is passing the external parts, when a scream of agony is usually uttered, which no one who has once heard it will be likely to mistake.

When pains exist which differ remarkably from the foregoing description, especially in having an irregular interval, and producing no dilating effect upon the os uteri, we may safely consider them as “false,” and as being no evidence of the existence of labour.

The course of a natural labour has been divided into stages—differently by different authors. The division we shall adopt is that of Dr. Denman, into three stages, merely because it is the most familiar, and is not less practical than any other I have met with. The first stage includes “all the circumstances which occur, and all the changes made, from the commencement of the labour to the complete dilatation of the os uteri, the rupture of the membranes, and the discharge of the waters ;” the second, “those which occur between that time and the expulsion of the child ;” and the third, “all the cir-

cumstances which relate to the separation and expulsion of the placenta."

The premonitory signs already mentioned having probably shown themselves, the first stage commences by the occurrence of sharp pains in the loins or abdomen. These recur, as has been stated, at regular intervals; and, after they have lasted for some time, the increased mucous discharge from the vagina will be observed to contain some slimy matter tinged with blood. This is denominated by nurses "a show," or perhaps, "a red appearance:" it consists of the blood discharged by a rupture of the small vessels connecting the sides of the cervix uteri to the membrana decidua which crosses it; and of the plug or operculum of inspissated mucous which closes the womb during gestation: in some instances, the latter will be discharged in its perfect plug-like form. The pains at first are "grinding," and have a long interval; but the latter gradually shortens, while the pains themselves become longer. If we examine *per vaginam*, the os tinæ will be found to open slightly during each pain, and by degrees to become more and more permanently dilated. As this occurs, the bag of membranes is protruded into the opening, and, acting as a soft wedge, materially assists in the dilating process. Each pain forces more of the sac into the vagina, until at last it presses upon the external parts; when, the dilatation of the os tinæ being complete, the membranes burst, and the liquor amnii is discharged; so terminating the first stage.

During this stage a slight degree of febrile ex-

citement generally exists; the patient is anxious and desponding, with a raised pulse, and flushed face: sometimes there is considerable fever, with shiverings, headache, thirst, &c. In almost every instance, there is nausea and vomiting, arising from the close sympathy which exists between the stomach and os uteri. Some women sleep between every pain throughout the whole course of their labour.

In cases of first children, the dilating stage commonly occupies several hours (from six to thirty-six); but in some persons, especially those who have had a number of children, the os uteri opens with very few pains and little difficulty. Occasionally the waters are discharged too early; an occurrence generally followed by uterine action so violent as to exhaust the patient before the mouth of the womb is opened sufficiently to admit of the passage of the fœtus, thereby rendering the subsequent progress of the labour tedious and unfavourable.*

Second stage.—After the waters have been discharged, the true bearing or expulsive pains more decidedly set in; the interval becomes shorter, while the uterine action continues a longer period, and is accompanied with more voluntary exertion.

The head of the child is now driven through the

* This consequence would appear to follow only when uterine action comes on immediately (say in twenty-four or forty-eight hours) after early rupture of the membranes. I have known the accident to occur days and even weeks before labour, and yet the latter to be easy and natural.

os uteri into the vagina, passing the brim with the sagittal suture, corresponding to one of the oblique diameters. As the pains continue, the face is turned into the hollow of the sacrum, and the head presses upon the perineum, the uterine efforts appearing to act upon the child as if they would force it backwards through the latter part.* At this time, if there be any fœces in the rectum, they are expelled during the pain; or if the intestine be empty, the woman mistakes the pressure upon it for an inclination to go to stool. By degrees, however, the head is guided along the inclined planes of the sacrum and ischia, until the vertex is forced under the arch of the pubis, and appears externally between the labia. From this position it recedes upon the cessation of the pain, and is again protruded by the next effort, the retraction and protrusion being repeated a greater or lesser number of times, according to the more or less dilatable condition of the external parts, until at last a powerful pain steadies the head, and effects its complete expulsion. At this moment (especially with a first child) the suffering of the woman is wrought to the highest pitch, and she occasionally experiences a smart rigor, or even becomes temporarily delirious.

After the expulsion of the head, there is commonly an interval varying from one minute to ten or fifteen: the pains then again recur, and by them the face of the child, which, at the moment of expulsion, looked toward the anus, is turned to one

* Vide Mechanism of Parturition, chap. 3.

thigh of the mother : thus bringing the shoulders into the long diameter of the vulva. By the succeeding pains these latter are expelled, one before the other, and finally the body and limbs are driven out of the vagina, all being accomplished, in a natural case, by the unaided action of the uterus.

It is not to be supposed that every natural labour is divided exactly into the stages we have laid down ; on the contrary, there is an endless variety of trifling circumstances. In many cases, for example, the waters are discharged before the os uteri is fully dilated ; and again, the bag of membranes may remain entire until both it and the head within it are expelled from the vagina. There are many variations, also, as to the length of time and number of pains requisite for the expulsion of the head, and subsequently of the body and limbs. All these slighter differences must be learned from actual attendance upon a great number of labours ; and when an acquaintance with them is acquired, it constitutes a main part of the unwritten although most valuable knowledge of the practical accoucheur.

Third stage.—Immediately after the birth of the child, the uterus, contracted to about the size of a foetal head, may be plainly felt through the relaxed abdominal parietes. After a short interval, slight griping pains return, and the placenta, usually accompanied by some clots of blood, is expelled, passing through the rent in the membranes in such a manner as to invert the latter. Sometimes one pain is sufficient to accomplish this process, and it occasionally is finished by the last pain of the second

stage. This, however, is not usually the case, and according to the observations of Dr. John Clarke, which I believe to be tolerably correct, the average time for the expulsion of the afterbirth is twenty-five minutes. Whether it be done in a space of time longer or shorter than this, it is always effected, *in a natural case*, solely by the action of the uterus. The third stage of labour being completed, the uterus descends into the pelvis, and can be felt there (through the abdominal walls) contracted to about the size of the closed fist.

CHAPTER IX.

DUTIES OF THE ACCOUCHEUR IN NATURAL LABOUR.

HAVING now described the physiological progress of a perfectly natural case of parturition, it will be well to consider the duties of the practitioner under such circumstances.

In the first place, then, it is always advisable to attend upon a patient as soon as possible after being sent for; we can never depend upon the account given by the attendants, and should always satisfy ourselves as to the progress of the labour, that no opportunity for giving assistance (if such should be needed) may be suffered to escape. The only matters necessary to be taken to a patient's house are a catheter, a lancet, and a little tincture of opium; these may be suddenly required, and it will be well to have them at hand, but all other obstetric apparatus I would strongly advise to be left in the practitioner's study; if accidentally seen in the lying-in chamber, they cannot fail to excite alarm, and I think we should never familiarize our own minds to the idea of their being *ordinarily* necessary in practice.

In approaching the patient, some little tact is requisite; we should always first let her be apprized of our approach, as the unexpected appearance of a medical man has been known to affect the ner-

vous system of a timid woman so powerfully as to cause a suspension of uterine action. We should, also, before seeing the patient, make enquiries from the nurse as to the period when labour commenced, the nature of the pains, whether there has been any discharge from the vagina, whether her bowels have been opened, or she has passed urine freely. Having ascertained these particulars, we may then visit the patient, and enquire from herself how long she has been suffering pain? what is the situation of her pains? how often they occur, &c. We may also examine her tongue and pulse, and if she be in bed, it will be well to place the hand upon her abdomen, in order to learn if it has subsided, and if the uterus be disposed to contract firmly upon its contents. All this should be done seriously, but at the same time cheerfully, and without embarrassment or unnecessary assumption of solemnity. If the woman has had children before, and the symptoms show decidedly that she is in labour, we should not leave her without making an examination; but, if it be a first case, and the labour only commencing, there will be no necessity for doing so at once.

Young practitioners often feel a difficulty in first proposing an examination; but the fact is, that any embarrassment that may arise is generally altogether of their own creation. The woman's delicacy never should be aroused by any comments upon "the disagreeable duty that is necessary to be performed," &c. &c.; the thing should be done (without talking about it) as coolly as if we were merely feeling her pulse, and our manner should never be-

tray any consciousness of the operation being in the slightest degree indelicate. If we adopt this plan, we shall seldom fail in getting an examination whenever we think it necessary; and the only intimation we need make of our purpose is, to desire the patient to lie in the proper position; or to ask the nurse for a napkin, either of which expressions will be perfectly well understood, and we shall, in all probability, have no farther trouble.

Before adverting to the mode of examination, we may describe the position in which the woman is usually placed while it is making. This is generally the same as that in which she is to be delivered, or what is commonly called "the obstetric position," and differs in different countries. In Great Britain the woman is always placed upon her left side, with her thighs flexed, and her hips brought close to the right side of the bed; to prevent the latter from being wet, a dressed sheepskin or thickly folded blanket is placed upon it, and covered with a doubled sheet, immediately under the patient's hips; after delivery, the sheet can be slipped away, so as to make the woman somewhat more comfortable without any injurious disturbance. This process is termed by nurses, "guarding or preparing the bed." On the Continent, the usual obstetric position is upon the back; and among the peasants of this country women are placed occasionally (but not always) upon their knees, both for examination and during labour.

The patient being properly placed, we stand at her back and pass the right or left hand (whichever

we think most convenient) under the bed-clothes, with as little delay as possible, up to the vulva, into the posterior extremity of which one or two fingers are to be introduced. If the os uteri be not very high, it will be sufficient to examine with the forefinger alone; but should the latter not be long enough, we shall be enabled to make a more satisfactory examination by passing, at the same time, the second finger. In either case, our object is to investigate accurately the condition of the os uteri, and the nature of the presentation within it.* In searching for the former, we must recollect that it is situated very much backwards towards the sacrum, and that frequently the cervix, thinly spread over the presenting part, will meet our finger very near the os externum, while the os tinæ lies considerably higher, and almost beyond our reach. Under such circumstances, I have sometimes been enabled to feel it, by making the nurse place her hand upon the patient's abdomen, and gently press down the uterus.

The sensation conveyed by the mouth of the womb varies very much in different cases. Very frequently, when labour has been going on for some time, we can pass our finger into it and feel its edge like a thin free membrane spread equally over the child's head; when this is the state of the part, it

* It will be also well to take the same opportunity for forming a general estimate as to the size and formation of the pelvis, especially in first cases, where we have not the experience of former labours.

will probably become thicker as dilatation advances, which will be likely to go on rapidly and favourably. In other instances, the os tincæ feels from the commencement thick and rounded, and sometimes firm and hard, as if tumefied in consequence of inflammation. We should always make part of our examination during a pain, and if we then find that the opening is sensibly increased by the uterine action, and especially if the membranes are protruded into it, we may safely conclude that labour has set in.

(Arrangement of the lying-in chamber.—The most common error we have to correct is, there being too many people in the room. More than two persons should rarely be allowed, never, unless the room be large. N. B. Never allow the husband to be present. If he is a man of sense and delicacy he will not desire it, and if he is not, the more reason you should keep him out of your way.

Ventilation is all important; this, together with a proper temperature, can best be secured in cool or cold weather, by having a little fire in the grate, and, at the same time a window drawn a little down, or a door partly open. The temperature should be rather cool than hot. All perfuming by flowers, scented waters, burning of pastiles and the like, should be avoided; the only true purifier is fresh air.

The temperature of the room may vary as labour progresses, during the second stage, while the woman's voluntary muscles are in action, and her circulation excited, the room should be quite cool;

when the child is born, the mother commonly falls into a state of collapse, and is very sensible to cold, then a draught of fresh air, or a too cold room, especially when there are wet things about her, may cause mischief.

Dress.—The dress should be simple and loose, no ligatures or corsets to impede the circulation or interfere with the efforts.)

As to the time that will be occupied by the first stage, we must draw our conclusions from the extent of dilatation, and also from the progress that may be made in that process between any two periods of examination; if the case be a first one (for example), the os tincæ only sufficiently open to admit our finger, and the effect of each pain very slight, we may expect that the first stage will occupy a considerable period; on the other hand, if the opening be as large as a half crown piece, and is increased permanently by every contraction of the uterus, we may look for a speedier result. The relaxed and apparently dilatable condition of the os uteri, and of the vagina and external parts, will also lead us to hope for a quick labour; while the opposite conditions warrant a contrary conclusion. In women who have had many children, however, we may be very much deceived, and should be constantly upon our guard, as dilatation often occurs quite suddenly, without any previous indications from the state of the parts; it should therefore be a standing rule with accoucheurs to deliver no *positive* opinion as to the period when labour will terminate.

Having made our observations respecting the

progress of the case, we must next proceed to ascertain the presentation. This part of the examination should always be conducted during the absence of pain and consequent relaxation of the bag of waters, as we can then most readily feel what is contained in the cervix, and also run less risk of rupturing the membranes, an accident that should be carefully avoided. In natural labour, we can, under these circumstances, usually feel the head from the very commencement: we recognize it by its roundness and firmness; and also by the sutures and the posterior fontanelle, whenever we can distinguish the latter. Persons who have acquired a *tactus eruditus* from frequent practice, will be often able to ascertain the exact position of the head, with regard to the bones of the pelvis; but such nicety is not to be expected by the beginner, and, in fact, is little to be desired, as knowledge of this kind should have no influence upon our treatment, and is only to be looked upon as a matter of scientific curiosity.* In making an *early* examination, we shall be often enabled to feel the presentation, by having the uterus pressed down by a hand on the abdomen, in the way already mentioned.

Having satisfied ourselves that all is right, and that the labour is progressing, we may withdraw from the room of the patient; our presence there during the first stage is not needed, and, by operating as a restraint upon the woman, may even be injurious. When there is any probability of the

* Vide Mechanism of Parturition, chap. 3.

case terminating shortly, it is unnecessary to say that we should not leave the house ; and the young practitioner should constantly recollect that it is better for his reputation to give unprofitable attendance in many cases, than to run the risk of having one concluded during his absence.

During the dilating process, it is not necessary to confine the patient to bed : she may be allowed at her pleasure to sit up or walk about the room. If she be disposed to eat, she may get any light food, as gruel, or tea and dried toast, or even a little beef tea ;* nourishment of this description will keep the stomach healthfully employed, and will support her strength, but no cordials or stimulating food or drink should, on any account, be permitted.

Medical treatment is seldom required in a natural case : if the bowels have been confined, it will be useful, at the commencement, to administer an aperient,† or if the labour has somewhat advanced, to clear out the rectum with an enema. The bladder should be carefully attended to throughout the whole labour, and the nurse cautioned to encourage the

* It is often advisable, when we have to deal with dyspeptic people, to give a little solid food, as slops are apt to produce derangement of the stomach, which, in its turn, becomes a frequent cause of irregular uterine action.

† Castor oil answers very well for this purpose, if the woman's stomach will bear it ; or the following draught :—

R Pulveris Rhei, Sulphatis Potassæ, aa ʒ j. ; Tincturæ Rhei, ʒ j. ; Aquæ Cinnamomi, ʒj. M. Fiat haustus.

For the enema we may use the following :—

R Decocti Hordei lb. j. ; Olei Ricini, Muriatis Sodæ, aa ʒj. M. Fiat enema.

woman to empty it from time to time ; if retention occurs, it must be relieved by the introduction of the catheter.

(To introduce the catheter is not always easy—the following hints may be of use to the unexperienced. You find the orifice of the urethra without difficulty, but when you attempt to pass upwards and backwards into the bladder, the fetal head which then rests upon it interferes. The bladder is displaced, it may be pushed upwards and forwards over the pubis, or downwards and backwards so as to present, a fluctuating tumour, in the vagina. Mad. Boivin's directions are excellent: "when the point of the instrument is introduced, depress the other end till the shaft is parallel to the vulva, the convexity being towards the pubis, now push the instrument forward, "*avec management*," "humouring it," till it has penetrated $1\frac{1}{4}$ inches; then rotate the catheter and advance it slightly, it will enter the bladder." A flat catheter is best.)

During the entire of the first stage, the duties of the accoucheur are more passive than active; his object, in fact, should be, rather to watch that nothing interrupts nature in her operations than to attempt giving her any assistance. When the second stage commences a little more interference is warrantable, but still nature should be allowed to do as much of her own work as possible.

There are two main points to which our principal attention should be directed during the second stage: one of these is the preservation of the peri-

neum, and the other the promotion of an effectual and permanent contraction of the uterus.

Occasionally, when women are delivered without *proper* assistance, considerable injury is done to the perineum while the head of the child is passing the vulva: a rent of more or less extent (sometimes passing into the rectum) may take place; or, in some rare instances, the head (without injuring the fourchette) may be driven through the perineum instead of the natural opening, constituting what has been termed "a circular perforation." When we consider the extreme thinness to which the part is spread out, and the distension which it suffers, we may rather be surprized that accidents of the kind do not very frequently happen: and, in fact, a slight tear (at least of the mucous membrane) does occur in almost every case of first labour. To lessen the risk of this injury, which (if it amount to any considerable extent) is one of the most miserable that can befall a woman, the plan of "supporting the perineum" has been devised. To this duty the accoucheur must attend as soon as the first stage has terminated, and the head of the child begins to press upon the external parts.*

The most convenient manner of performing it is, to sit at the right side of the bed, and, consequently, at the patient's back, and to apply the palm of the

* Beginners commonly fall into the error of supporting the perineum too soon. If pressure be made before the time specified above, it may have the effect of heating and inflaming the parts.

right hand (covered with a towel*) flat upon the perineum, the fingers then passing upon each side of the vulva. The left hand may be employed in preventing the woman from suddenly withdrawing, which she is apt to do during the suffering of a pain. The degree of pressure employed should be merely sufficient to give steady and uniform support to the part, but should never be so great as to retard the advance of the head.

(The direction in which we apply our force when supporting the perineum, will often decide the question whether we do good or harm. Our object should be, by the hand to give to the perineum the same support which is given further back by the coccyx and sacrum. The hand should be so placed as to continue the curve of the sacrum and coccyx, and the force applied upwards and a good deal forward. In this way, so far from hindering we facilitate the progress of the child's head, by impressing upon it an impulse in the direction of the outlet of the pelvis.)

The employment of such a quantity of force as would retard the head must of itself tend to injure the perineum by pressing it against the sharp edge which the posterior margin of the frontal bone often presents when the parietal bones are much compressed together. By gently keeping up a proper degree of support, we can generally prevent any serious mischief; and the distended perineum

* This is a useful precaution, both for the sake of cleanliness, and as it prevents the heat of the hand from drying up and irritating the perineum.

at length slides uninjured over the child's forehead and face. When this is accomplished, the great danger is over; but still the sudden passage of the shoulders may do harm, and it is advisable to keep up the support until they are expelled. After the head escapes, we must change the position of our hand, and place it across the perineum, with the radial edge applied close under the child's chin.*

Several minutes often elapse before another pain comes on; and during the interval we should ascertain with the index finger of the left hand whether the cord is twisted round the child's neck. If it be, we must draw it cautiously out, and pass it over the head; or, if that be not possible, we may open the loop, so as to allow the shoulders to pass through it. After this has been done, we should pass the same finger into the mouth of the child, and remove any mucus or membrane that might obstruct the free admission of air. The irritation produced in the mouth by this process will often excite the infant to breathe while its body is yet in the uterus, and will thus much lessen the danger of suffocation incident to a delay in the completion of the delivery. No attempt should, under ordinary circumstances, ever be made to expedite the passage of any part of the child: all should be left to the efforts of the uterus, which, when so much progress has been gained, will very seldom indeed fail in accomplishing the whole operation. When the shoul-

* At this period the practitioner will generally find it convenient to stand up, unless the bed be unusually low.

ders have escaped, we are then free from all anxiety with respect to the perineum, and may remove our right hand, and simply allow the head to rest upon its palm.

It now becomes necessary to attend to the other point of practice which has been mentioned; viz., to endeavour to ensure a full and permanent contraction of the uterus. For the accomplishment of this purpose, we know of no more powerful means than the employment of gentle friction and pressure over the organ, through the abdominal walls. Accordingly, as soon as the perineum is safe, the left hand should be placed upon the patient's abdomen, under her clothes, and the uterus followed down into the pelvis, as it contracts upon and expels the body and limbs of the fœtus. In some cases, when the uterine action is slow, slight friction on the abdomen will at once bring on a pain, which otherwise might not return for several minutes.

Next to ensuring a *perfect* contraction of the uterine fibres, it is of the greatest importance to maintain them *permanently* in that condition; and this we shall best effect by keeping up gentle pressure, and allowing no interval for relaxation. In order to answer this intention, as soon as it becomes necessary for us to attend to the child, we should cause the nurse to pass her hand over our own, in such a manner as that, when ours is withdrawn from the abdomen, she may be enabled to grasp the uterus, and keep up as effective a pressure as we have been employing. Upon no account should this pressure be discontinued, until an equal support

is given by the adjustment of the *binder* in the way afterwards to be considered.

Our attention is next to be turned to the child, which has now been entirely expelled, and is probably squalling and kicking lustily in the bed. If it be so, we may at once separate it from the mother. Before doing this, however, we must interrupt the vascular connection between the two beings, by tying a ligature (composed of six or eight housewife threads) tightly upon the cord, about two inches from the child's abdomen. A similar one is then to be placed about two inches nearer to the placenta, and the funis between them may be divided with a scissors. The whole of this operation should be conducted fairly within our view, which may be done by drawing out the child a little, without at all exposing the mother. But even if exposure cannot be altogether avoided, the rule that we should see the part which we cut still remains absolute, as respect for its mother's delicacy would be a poor excuse to the child for the loss of its penis or finger,—accidents which have been known to occur in an attempt to separate the funis under the bed-clothes. After the division, we should carefully wipe the blood from the cut surface of the part of the cord attached to the child, to ascertain that the vessels are properly compressed, and that there is no danger of subsequent hemorrhage.

Should the child not have breathed perfectly after birth, it is better to leave it attached to the mother as long as the cord continues to pulsate, and to endeavour to excite respiration by tickling the mouth

and fauces, and gently slapping and rubbing the chest. If these means do not succeed, and the placental circulation ceases, we must divide the cord; and in this case, if the child's face be livid, it is better not to put on a ligature in the first instance, but to allow a few drops of blood to flow, which may possibly remove the state of asphyxia, into which the child has fallen. Other means for establishing respiration should also be adopted, which we shall consider at a future period.

The cord having been properly secured, the child may be given to an attendant; and the next step requiring the attention of the accoucheur is the putting on of the binder. This important part of the paraphernalia of the lying-in room should always be examined at the commencement of labour, that we may not be disappointed in its qualities when we come to need it. Those generally used consist of a piece of "pillow fustian," or diaper, long enough to go round the woman's body, and broad enough to reach from the ribs to the trochanters. More elaborate contrivances, furnished with straps and buckles, to facilitate their application, are employed by some gentlemen. When we are at a loss, a very good substitute for the common binder will be found in a long pillow-case or check apron. The mode of application is as follows:—without allowing the woman to move, we slip, with one of our hands, an end of the binder under her loins, next to her skin; this we pass gently on until it can be laid hold of by an assistant (or by our other hand), at the opposite side, when it can be spread

out, and drawn downwards, until its lower edge is below the trochanters. The nurse should never be suffered to withdraw her hand from above the uterus until we are ready to fasten the binder; which we do with strong pins, beginning at the lower edge. The force with which we tighten it should be sufficient to give comfortable support; and it will not be of much consequence even if it be felt a little too tight at first, as it will slacken upon the expulsion of the placenta. By beginning to pin at the lower edge, and placing that below the trochanters, we prevent the binder from slackening by slipping upwards, as the tapering form of the hips would otherwise incline it to do.* When the binder has been properly adjusted, a soiled sheet may be pushed a short way under the hips, so as to prevent the woman from being annoyed by the wetness of the bed; and, having laid the divided cord upon this, we must patiently await the accomplishment of the third stage.

When the first two stages of a labour have been conducted in the manner already described, the result, in a very great majority of instances, will be a speedy and safe separation of the placenta, without any further interference whatsoever. Sometimes, the pain which expelled the limbs of the child will,

* That extremity of the binder which has been passed under the woman, (she still lying on her left side with her back towards the practitioner,) should be pinned over the other, by which means we draw up the pendulous abdomen, and give it more perfect support.

at the same time, drive the afterbirth into the vagina. Generally, however, the uterus remains quiet for ten or fifteen minutes; after which the patient will, probably, experience a slight griping pain or two in the abdomen; and if we then pass our finger along the cord, we shall, most likely, be able to feel its insertion into the placenta, and ascertain that the latter is passing through the os uteri. We need not pull, or even stretch, the funis, as the contractions of the uterus will almost always effect the complete expulsion. But should this not take place, there appears to me to be, in such a case, nothing wrong in removing the secundines from the vagina, provided there be no appearance of such vascular excitement as might lead us to dread secondary hemorrhage. In doing this, it is still inadvisable to extract by the cord, as we thereby bring against the opening the broadest surface of the placenta. On the other hand, we shall very much facilitate the operation if we hook one or two fingers on its edge, and then draw it sideways, and with a slow rotatory motion, through the os externum.*

Should the case not proceed so quickly as we have supposed, and half or three quarters of an

* Immediately after the placenta has passed out, it is well to turn it round upon its own axis two or three times, as we thereby twist the membranes into a sort of rope, and so have a better chance of extracting them entire: if any part remains behind, it serves to collect clots of blood, which, in their turn, occasion after-pains. I always make it a rule to examine carefully the placenta and membranes after their expulsion, in order to satisfy myself that nothing has been left in the uterus.

hour elapse without any action of the uterus, it will be well to stimulate it by a little moderate friction on the abdomen, and by tightening the binder, or, if necessary, placing a compress under it. As a general rule, I would say, that no attempt should ever be made to extract by pulling at the cord. By doing so, we always incur the risk of producing laceration of the funis or placenta, or inversion of the uterus, or even (according to the observations of Dr. Douglas,*) of indirectly causing retention of the after-birth, by irritating the os uteri, and thus giving rise to the spasmodic contraction of the lower fibres of its body, which that gentleman conceives to constitute hour-glass contraction. We may merely put the cord gently on the stretch, which will, perhaps, excite uterine action; but if this and the measures already mentioned fail, the case becomes one of retained placenta, and must be treated accordingly.

After the delivery has been entirely accomplished, it is always advisable to wait near the patient for at least half an hour; and we should, on no account, leave her then if there be any disposition to hemorrhage, or even an unusual vascular excitement. Before taking our departure, we should always carefully ascertain, first, that the uterus is properly contracted, (the patient not flowing too much,) and the binder well adjusted; secondly, that the pulse is regular; and, thirdly, that there is no danger of hemorrhage from the child's funis.

* Med. Trans., v. 6.

CHAPTER X.

VARIETIES OF NATURAL LABOUR.

CERTAIN variations occasionally occur in the circumstances of a natural labour, of which the three following require some additional consideration:—

1. When the head is expelled with the forehead toward the pubis, or what is technically called the fontanelle presentation; 2. Face presentation; and, 3. Descent of the hand or arm together with the head.

The first variety often eludes observation until the head is in the act of escaping from the vulva. We may discover it by the presenting part of the head not being so conical as when the vertex presents, and by its not so readily escaping under the arch of the pubis; by the direction of the sagittal suture; and by the facility with which we can feel the anterior fontanelle* near the symphysis pubis. By referring to what has been said in the chapter upon the mechanism of parturition, it will be seen that this presentation will often occasion a tedious labour: in almost every case, however, nature will be sufficient to overcome the difficulties. Some

* The anterior fontanelle is distinguishable from the posterior by its lozenge shape, its greater size, and its four (instead of three) concurrent sutures.

eminent accoucheurs* have recommended an attempt to change the situation of the head during the first stage of labour; but the observations of Nägele, already quoted,† prove that nature, in a vast majority of instances, effects the change herself, and that we are not warranted in any interference by the average result of those cases that are actually *expelled* with the face forwards. All that is generally necessary is, a careful attention to the perineum, which incurs more than ordinary peril.

When the face presents, we shall also generally find the labour tedious, from the reasons already laid down.‡ A considerable difficulty often arises in the diagnosis of these cases: the marks are to be found in the features, the mouth, nose, eyes, &c.; but, when the face is much swollen, as it usually is, it is often by no means easy to recognise these. I have known the mouth to be mistaken for the anus, and the case thought to be a breech presentation. If we can feel the mouth, however, we always have the means of discriminating, by ascertaining the presence of the tongue.

In the progress of the case, the chin is generally expelled first under the arch of the pubis, and nature usually accomplishes the business unassisted. It is neither necessary nor warrantable to attempt any alteration of the child's position in a face case: all we have to attend to is, to obviate the effects of

* John Clarke, Smellie, Burns.

† Vide p. 38.

‡ Vide pp. 32, 39.

pressure upon the mother's bladder, which is said to be more liable to suffer than in vertex presentations; and to avoid injuring the features by frequent and rude examinations. The face is usually frightfully swollen and discoloured, at the time of birth, but is restored to its natural condition, in a much shorter time than we could at first expect.

The hand or arm occasionally descends with or before the head, and may cause delay and difficulty, by the increase of bulk. If the pelvis be narrow, a necessity for instrumental aid may even arise. When the complication is discovered before the head becomes jammed in the cavity, it is possible to prevent the descent of the arm, by holding it up during a pain, and allowing the head to descend before it: but any attempts of this kind should be made with extreme caution; as, in endeavouring to keep back the arm, we might be unfortunate enough to convert the case into one of shoulder presentation.

Among the slighter varieties of natural labour, may be mentioned very early rupture of the membranes, without immediate accession of labour. I have known this to occur three weeks before delivery, and yet the latter to be good, and the child alive. A slight allusion to this circumstance has been already made.*

In the foregoing observations, I wish it to be understood as my opinion, that the existence of any of these varieties of labour should not of itself be

* Vide p. 114.

considered as sufficient to justify instrumental interference. Such, however, may be required; but in administering it, we must be entirely guided by considerations that will be subsequently adverted to.

CHAPTER XI.

DIFFICULT LABOUR.

STILL following the division of Denman, we shall include under this head "every labour in which the head of the child presents, and which is protracted beyond twenty-four hours." Like every other artificial definition, it will be presently seen that this does not perfectly apply to all cases, and that a labour, for example, which has not lasted twelve hours, will sometimes be more entitled to the character of difficult, than one which has lasted forty. As this class includes a great variety of cases, we shall subdivide it into three orders:—the first, including those labours in which the time is protracted beyond twenty-four hours, but which, if properly managed, may be accomplished by nature; the second, those in which instrumental aid is required, but such as is compatible with the safety of both child and mother; viz., the forceps and vectis; and the third, those in which the difficulty is so great, as to render it necessary either to diminish artificially the bulk of the child, or to provide for it a passage larger than the natural one.*

* In this subdivision we have not followed Denman, who makes four orders, and founds them upon the different *causes* of difficulty.

Difficult labour of the first order may owe its origin to one or more of a great number of causes, which we shall consider as divided into two classes :—

First, those which increase resistance to the passage of the foetus.

Secondly, those which lessen the force of the expelling powers.

In any individual case, causes from both classes may be combined. The first includes,—

a. Rigidity of the soft parts.—When speaking of the various conditions assumed by the os uteri during labour, it was mentioned that some were much more favourable to dilatation than others; we also find the same to hold good with respect to the vagina and vulva. In some instances, especially of first pregnancy at a late period of life, we find the external parts rigid, hot and devoid of their usual moisture; occasionally so much so as to make a common examination painful. When this is the case, we shall probably find the os uteri puffy and rigid, and very little disposed to dilate.

This condition will be produced by any cause which excites a febrile state of the woman's system; and thus sometimes follows bad management in a labour, that, if left to itself, would have proceeded happily. Thus, rupturing the membranes during the first stage, will bring the hard head of the child into contact with the mouth of the womb, instead of the soft accommodating wedge, formed by the bag of waters, and will excite a state of local fever, that frequently interrupts

dilatation, and occasions tedious labour. Stimulating food or drink, the room being too hot, the patient remaining constantly in bed, frequent examinations, &c., may all be followed by the same effect, which may also be produced by the fever consequent upon neglecting to evacuate the bladder, or to remove costiveness. I think I have observed a similar indisposition to dilatation to depend upon a jamming of the anterior portion of the cervix, between the head of the child and symphysis pubis, in cases in which the os uteri was turned more than usually backwards and upwards towards the promontory of the sacrum.

The treatment of these cases must vary according to circumstances. In the first place, every thing likely to excite fever must be strictly avoided: the room must be kept cool and quiet; if the woman be disposed to speak, the conversation of her attendants should be cheerful; she should be encouraged to walk about occasionally, but not so much as to fatigue her, or create any febrile excitement; the bladder should be carefully attended to, and, if necessary, the catheter introduced: if the bowels be confined, an aperient should be given, and, perhaps, an enema administered, as recommended in natural labour: she should have abundance of cooling drinks, as tea, whey, barley water, lemonade, &c.; and if she take any food it should be of the lightest kind. Where there is much vascular excitement, with quick pulse, flushed face, and heat of skin, in a plethoric person, it is almost always advisable to abstract blood. The quantity must, of

course, be regulated by circumstances ; but, as a general rule, I would say let it be the minimum required.* I think I have observed considerable benefit to result in such cases as these from the employment of nauseating doses of tartar emetic, in conjunction with, or as a substitute for, bleeding ; but there certainly are circumstances under which the latter cannot safely be dispensed with. Opium has been much recommended as a relaxant ; but it is a medicine, the effect of which in parturition we cannot accurately measure ; and it may totally suspend the pains, in place of expediting labour by its relaxing effects. Opiates should not be given when the bowels are confined : but when these have been opened, and the woman is teased with ineffectual pains, we may often procure for her some hours' sleep, and do much good by the administration of a moderate dose (say thirty drops) of laudanum. There is one rule which is very little attended to in the administration of opium, yet it appears to me to be of great importance : that is, when we want to produce the sedative effects of the drug, never to give it, except at those times when the patient is naturally disposed to rest. A dose of laudanum, for example, that, at night, would produce quiet sleep, would, if given in the morning, stimulate, and increase febrile action.

The plans just recommended, together with *patience*, will generally remove any difficulty that may arise from rigidity of the soft parts. Other means,

* Would that this rule were made absolute in medicine !

as fomentations, the introduction of tallow into the vagina, application of belladonna to the os uteri, injections of tobacco, the warm bath, &c. have been recommended; but of their effects I know nothing from experience, and, *à priori*, see no reasons that can sanction their use.

b. Tumours and Diseases of the soft parts.—The hymen is sometimes preternaturally strong, and has been found in existence at the time of parturition. There may be also cohesions of the labia, either original, or the consequences of injuries. Such obstructions generally yield to time and patience; but cases are upon record in which it was thought necessary to divide them by an incision; and some are even described, that required a division of the cervix uteri in consequence of obliteration of its natural opening. Tumours of various kinds, and herniæ of the bladder or intestines, by projecting into the vagina, have occasionally interfered with the passage of the child: they are fortunately rare, and must be treated according to circumstances; if we can pass them above the head, labour may go on well. At other times, we may perhaps open tumours if their contents be fluid, or we may be obliged to lessen the child's head. The only general rule that can be laid down is, to take such steps as may enable the birth to be accomplished with as little injury as possible to the mother.

c. Disproportion between the passage and the body to be propelled through it.—A slight degree of disproportion may exist and render a labour difficult, and yet nature be sufficient to accomplish the busi-

ness. In such a case the head often bears great compression uninjured, and is expelled elongated to a most extraordinary degree. We should remember this, and not think of instruments as long as symptoms do not imperatively demand them. The disproportion may be caused by the small size of the pelvis, or stiffness of the coccygeal joint, or by unusual size or deformity of the fœtus.* The treatment must be very similar to that recommended for rigidity of the membranes; we must exercise our patience, and avoid every thing likely to excite fever. Where we can ascertain that there is a monstrous formation of the child, as, for instance, a hydro-cephalic head, we may, of course, give assistance earlier than if we supposed the child to be alive: in such a case, puncturing the head, so as to evacuate the contained fluid, will probably expedite the labour much, and save the woman a great deal of pain and risk.

The class of causes which lessen the expelling force includes,—

a. Original inertness of the uterus.—This may depend upon weakness of constitution, produced by any cause, or upon a deficient irritability of the uterine fibres. It is said also to be sometimes occasioned by over distension of the uterus, or by extreme thickness of the membranes. We might expect that persons in the last stage of debilitating diseases would present examples of this want of ac-

* The body of a dead fœtus may be swoln by the air disengaged during putrefaction, and considerable difficulty be thus occasioned.

tion; but women in phthisis, fevers, &c. will frequently expel their children, without any difficulty, a few hours before death. There are no cases more trying to the patience of the accoucheur than those of inertness of the uterus. In midwifery, however, patience is always a safe ally; and, by merely watching the woman, taking care that her strength is supported by light food, and avoiding all the *lax-dentia* already specified, we shall find that, although the labour may advance by very slow steps, yet in the end the uterine action will not often fail to be sufficient.

Aperients and enemata are particularly useful in this variety, often (especially the latter) exciting effective pains. Opium has been recommended in very large doses; but, when given thus, I have known it to paralyse the uterus completely; and I should prefer using it merely in the way advised when speaking of rigidity of the membranes.

It is in these cases of inertness of the uterus, that we most generally have favourable opportunities for the exhibition of *ergot of rye*; and it may be well now to notice that drug.

It appears to be at present pretty generally admitted that the *secale cornutum*, or *ergot*, does occasionally at least produce uterine action; that it frequently fails, however, cannot be denied, and this has usually been explained upon the supposition of its being liable to lose its active properties, and become inert. To try it fairly, then, we should have it recently powdered, and ascertain that it possesses its peculiar smell (resembling somewhat that of new-

known hay), and that it is not musty. Even with these precautions it occasionally fails, certain constitutions appearing not to be susceptible of its influence.

The mode in which I have been in the habit of administering *ergot* is, to infuse ʒss. of the powder in a tea-cupful of boiling water for fifteen minutes, and then give the whole of the infusion with a third of the infused powder, adding a little milk. If this has no effect, it may be repeated in fifteen minutes; but I think it unadvisable and useless to give a third dose: if the two first produce no pains, another will not have a beneficial action.

The circumstances which contra-indicate the use of this drug should be accurately understood. It never should be given until the os uteri is completely dilated, nor when there is malformation of the pelvis, or rigidity of the soft parts. If used when the os uteri is undilated, its effect would be similar to, and equally injurious with, too early rupture of the membranes: under the latter circumstances, it might cause lacerations of the uterus, or of the other soft parts. It never should be given when there is any preternatural presentation that may require to be rectified, nor in convulsions, nor when there is any tendency to head symptoms. In the first case, by increasing the uterine action, it would of course increase the difficulties; and in the two last it would be unsafe, for reasons presently to be mentioned.

On the other hand, if the passages be well prepared and dilated, the os uteri fully open, and the

head low down in the pelvis, with plenty of room ; in fact, nothing but the want of pains preventing its expulsion, we may safely use ergot in the manner above mentioned.

It may be supposed that greater success would attend the employment of larger quantities of the medicine ; but I am fully persuaded that these cannot be employed without exposing the patient to considerable risk. In several instances, I have observed delirium to follow the exhibition of large doses of ergot : it almost invariably depresses the pulse ; and I have known it to produce coma and stertorous breathing, without at all affecting the uterus.* If it produce these effects, it is manifestly improper when any head symptoms or tendency to them exist.

The first notice paid to the *secale cornutum* was attracted by its poisonous qualities ; it having been observed, when taken as an article of food, to produce gangrene of the extremities, and death. When given to animals, it acts similarly ; and, from two suspicious cases that came to my knowledge, in which it had been largely exhibited, and sloughing of the soft parts supervened (no instruments having been used), I am strongly disposed to adduce an additional ground for recommending its administration only in moderate doses.†

When inertness of the uterus depends upon its

* Perhaps even paralysing it.

† Vide Report of Wellesley Female Institution, in Dublin Med. Journ., vol. v.

over distension, or upon extraordinary thickness of the membranes, the proper remedy will be to rupture these with the finger-nail, or a probe, introduced during a pain. I suspect that these are causes of rare occurrence ; and, from what has been said respecting the evil consequences of too early evacuation of the waters, we should be very *chary* of interfering in this way.

b. Affections of the mind, as fear, anger, &c. powerfully affect some individuals, and often so much so, as to cause a complete suspension of pains. Knowledge of this fact furnishes, of course, a strong inducement to keep a patient tranquil and, as far as possible, free from all mental annoyance.

c. Shortness of the funis is said sometimes to retard labour, especially when it is at the same time twisted round the child's neck. Such extreme shortness is of very rare occurrence. It might possibly be necessary, after the birth of the head, to tie and divide the funis ; but such an operation ought not to be lightly undertaken, and will very seldom, indeed, be required.

[*d. Obliquity of the uterus*.—This is often a powerful but unsuspected obstacle to the progress of labour. Yet if attention be directed to it, and it be examined for, there is no difficulty in detecting it. If the obliquity be lateral we shall find one segment of the os near the centre of the pelvis, while, perhaps, the other cannot be discovered. If, now, we examine the abdomen, we find the fundus uteri inclined to the side opposite to that of the os. If the obliquity be anterior, which often happens to

women who have had many children, and have pendulous abdomens, one edge, the anterior of the os, will be felt far back towards the sacrum, while the other is out of reach. On examining the abdomen, we find the fundus uteri in the hypogastric region, projecting directly forward. To remedy these obliquities, the French writers recommend dragging the os uteri towards the centre of the pelvis, while the fundus is pushed the other way. This traction is always dangerous, often ineffectual, and rarely needed. It is usually sufficient to place the woman in such a position that the fundus will incline by its own gravity, to rectify itself. If the obliquity be towards the right, let the woman be on her left side, if towards the left, then on her right. If anterior, on her back. This change of position will often facilitate labour in a most surprising manner.]

Second order of difficult labours, or those in which instrumental aid is required, but such as is compatible with the safety of both child and mother.—Under this head are to be considered certain instances of the first order, in which the modes of treatment advised have not been successful in promoting efficient action of the uterus, and in which symptoms of constitutional suffering are beginning to appear.

It is always one of the most difficult points in obstetric medicine to decide upon the exact time when we can no longer trust to nature, but must have recourse to artificial assistance ; and it is often equally difficult to determine upon the precise means by which we are to assist. In considering the first

question, the practitioner must be very much guided by his judgment in any individual case, as to how much suffering can be borne without constitutional or local mischief: no rule of time can be laid down, as one patient may be left unassisted for sixty hours with greater safety than another can for ten. We can now, therefore, only state collectively those symptoms and conditions which indicate danger; the general medical knowledge of every accoucheur must inform him as to the weight which ought to be attached to the occurrence of one or more of these, in any particular instance.

The accession or continuance of general fever, after the means of relief already suggested have been employed, is always unfavourable: especially if the fever assumes a low type, indicated by a quick, unsteady pulse, tongue covered with sordes, muttering delirium, restlessness, and despondency. In persons whose constitutions are weakened by former ill health, or by having had numerous children, &c., even without the previous existence of fever, we occasionally meet great debility and prostration of strength, with a weak failing pulse, and a countenance which must be known to every person accustomed to see bad cases, but that I cannot describe otherwise than by saying that it bespeaks a want of power to resist disease:* such a set of symptoms, it is needless to say, call for prompt assistance.

* The appearance of the countenance alluded to, is one of those points which can be learned only at the bedside: it would be absurd to attempt describing it in words.

The same holds good when there is any evidence of local inflammation, such as rigors, occurring after the dilatation of the os uteri, and when the head is not pressing upon the external parts; vomitings of brownish (coffee grounds) matter under the same circumstances; pain and tenderness or tympanites of the abdomen; heat and soreness in the vagina; and fœtid olive-coloured discharges from the uterus. Cessation or irregularity of pains taking place, after the labour has been going on favourably for some time, is always a bad sign, especially when connected with any of the foregoing. But though the action should sensibly decline, yet if the presentation show some tendency to advance or even merely to fill up gradually the cavity of the pelvis; and if the patient's strength continues unimpaired, and her freedom from fever or inflammation is evinced by a disposition to sleep tranquilly, a quiet pulse, abdomen soft and tolerant of pressure, a cool, moist vagina, and a sufficient secretion of urine, we have no grounds for apprehension.

We may now turn to the next question, as to what circumstances render a case fit for the use of instruments not necessarily injurious to either child or mother—the forceps and vectis.

The rules of Dr. Denman, upon this subject, are excellent. According to him, these instruments should never be employed until the os uteri has been completely dilated, the membranes broken, and the ear become capable of being felt. The perineum and soft parts should also be in a relaxed condition, and there should not be such pressure upon

the urethra, as will prevent the introduction of the catheter. Dr. D. advises that the head should be in a position suitable for the use of the instrument (that is, with the ear to be felt), at least six hours before they should be employed. As this is a rule of time, it is, of course, not absolute, but must be left greatly to the discretion of the practitioner. The cases, in which we most generally have opportunities for using the forceps or vectis, are, simple inertness of the uterus from whatever cause; sudden accession of debility; and convulsions. They are said to be employed by some gentlemen of reputation when there is a certain disproportion between the head and the pelvis; and by the French the long forceps are recommended when there is obstruction at the brim. None of these practices are (so far as I am aware), taught or adopted in this country.

One caution may be introduced here, which is applicable to all circumstances requiring the aid of instruments; it is, never to employ them privately, without explaining their nature and objects to the patient's friends; and, *if possible*, never to employ them without the sanction of a consultation with another practitioner. In certain situations, the latter rule must, of course, be dispensed with, but never upon light grounds.

Third order of difficult labours.—Those in which it is necessary either to diminish the bulk of the child, or to provide for it a passage larger than the natural one. The general symptoms, indicating a

necessity for instrumental aid, having been already detailed, as well as those sanctioning the use of the forceps, in particular, we have now to consider the circumstances which require other means of instrumental relief. These are, in the first place, deformities of the pelvis, or tumours obstructing its canal; secondly, disproportionate size of the fœtal head; thirdly, such a degree of rigidity or inflammation of the soft parts, as would render them liable to injury, during the action of the forceps or vectis; and, fourthly, similar liability to injury of the bladder in consequence of retention of urine, with an impossibility of passing the catheter.

Distortion of the pelvis may arise from rachitis, mollities ossium, exostosis or ill-united fractures; most commonly they are occasioned by the first disease, and exist, of course, in very different degrees. The means that have been devised for measuring pelves have been already mentioned, and their insufficiency fully pointed out. In ordinary cases the deformity is not so great as to bring them obviously and indisputably within this order, and we have therefore frequently to canvass a great many circumstances before we can come to a conclusion.* If the woman has been previously de-

* According to Dr. Osborn, the diameter from pubis to sacrum must be more than two inches and three quarters to allow a living child to pass. He extracted a child with the perforator and crotchet through a pelvis that measured at its widest part only one inch and three quarters. Dr. Joseph Clarke thinks three inches and a quarter the least conjugate diameter through which a living child can pass.

livered by the crotchet, it is, of course, a justification for earlier decision upon its use in a subsequent labour; and, on the contrary, if she has ever expelled a child naturally, we shall be inclined to hesitate. Where tumours, distention of the bladder, or rigidity, or inflammation of the soft parts exist in any considerable degree, and do not yield to milder measures, we have, I think, generally, no alternative but the perforator.

Many persons think that a certainty of the child's death should frequently determine us at once: the mere death of the child, however, is no justification for the employment of any instruments, although, if we were sure that it had taken place, we would then certainly not delay so long, as to run the woman into the least danger. Accordingly, we act upon this principle, when we have to deal with a hydrocephalic head, or one that, from its putridity, or the looseness and overlapping of the bones, is beyond all doubt dead. Excepting these signs, and the accidental prolapse of a pulseless funis, I know of none others that positively determine the death of the child, and, therefore, think it unnecessary to enter into a lengthened consideration of those usually recited in books. The chief, independent of those above alluded to, are first, rigors toward the close of gestation; secondly, sense of coldness and dead weight in the abdomen; thirdly, want of motion in the child; fourthly, flaccidity of the breasts, and recession of the milk; fifthly, the impaction of the head for a considerable period (say some days); sixthly, evacuations of meconium from the vagina,

the head presenting; seventhly, fetid discharges: none of these, however, can be absolutely relied upon, although they may afford a strong presumption of death. The sound of the fœtal heart is, of course, positive proof of life, but our not being able to hear it is no evidence to the contrary, as it may exist and escape the observation of very experienced auscultators. The placental soufflet is evidence neither one way nor the other, as it does not constantly cease upon the death of the fœtus.

It appears to me, however, that it is not of so much importance as some suppose, to discriminate the child's death; our reasons for operating should be drawn entirely from the state of the mother, which ought, also, to influence our choice of instruments, except in those cases, where the obvious signs already mentioned free us from all anxiety respecting the child. But if there be the slightest chance of saving the latter, or even of avoiding its disfigurement, with due regard to the woman's safety, surely no person in his senses would think of using a destructive instrument.

In no case is the advice already given, with respect to the obtaining of a consultation, so appropriate as in those, which are likely to come within this third order of difficult labour. The operations alluded to in our definition, are three: viz., first, diminution of the head; secondly, section of the symphysis pubis; and, thirdly, the Cæsarean operation. The merits of these, and the manner of performing them, shall be considered in the next chapter.

[In all cases of difficult labours, whatever may have been the cause, especial attention should be paid to securing a perfect and permanent contraction of the uterus, and a discharge of the placenta. If the uterus has been inert, its inertia will be very likely to increase after the expulsion of the child; if the resistance offered by rigid soft parts, or a small pelvis, has exhausted its powers, they will be roused to action after delivery with more than ordinary difficulty, and the chances are very great that a uterus thus inert or exhausted, will, if roused to action, contract imperfectly, irregularly, or inefficiently: from imperfect contraction we have hemorrhage, from irregular action, hour-glass contraction and retained placenta.

Another very unpleasant consequence of difficult labours, is inflammation of the vagina and vulva. This is often very great in women who have a first child late in life. The remedies are, leeches and a large poultice.]

CHAPTER XII.

OBSTETRIC OPERATIONS.

“I wish that my present subject permitted me also to state what I have found on dissecting the parts after the use of the crotchet, and in particular where the forceps had been used, as I must presume, in a case improper for them. The injury which the seeming harmless instrument, the forceps, is capable of doing might then be proved, and a wholesome admonition given to the young surgeons.”—*Note to Sir C. Bell's Paper on the Muscles of the Uterus, in the Med. Chir. Trans.*, vol. iv. p. 336.

FORCEPS.—It is not necessary here to enter into a history of this instrument, nor a description of its various forms, as the former can be learned from any of the more elaborate systems of midwifery, and satisfactory ideas respecting the latter can be best obtained in the shop of an instrument-maker. The forceps in common use in this country are the common single-curved, the double-curved, and the male and female. The first are those which I prefer myself; but the exact form of the instrument is of little consequence, provided its application be guided by judgment and caution.

The position of the patient while we are operating should be the common obstetric one, upon the left side, with the knees a little drawn up, and a pillow placed between them; she should also be

brought so close to the edge of the bed, that her hips may project over it, and in that situation should be supported by an assistant standing at her back. [The position upon the back, the feet wide apart, and resting upon two chairs, while the nates project over the edge of the bed, is preferred on the continent of Europe, and in America, and is obviously the most convenient for the accoucheur, the safest for the woman, and therefore, *the best*. The only objection that can be made to it is, that it renders very considerable exposure unavoidable, this, however, is a minor point, the case is too serious to allow of our sacrificing a substantial advantage to a mere regard for appearances.] The first step should invariably be, to pass a catheter, as extracting while the bladder is full would expose that viscus to the risk of rupture, or of such injury as might be followed by sloughing and fistula.* It is also advisable to clear out the rectum by an enema.

After these preliminaries have been settled we are to sit down quietly by the side of the bed, holding in the left hand a blade of the forceps, which has been previously heated in warm water, and smeared with lard or butter. The forefinger of the right hand is next to be introduced between the symphysis and head of the child, and the ear to be felt for. When we feel the latter, we may pass the blade, held still in the left hand, very gently be-

* In difficult labour, we shall often have occasion to observe a temporary suppression of urine, which is generally secreted in profuse quantity shortly after delivery.

tween our finger and the head of the child, until it reaches the ear; after this it must be passed on with a wavy motion, keeping its point close to the child's scalp, until the lock reaches the external parts. After the blade has passed the ear, as we are then deprived of the guidance of our finger, we must be doubly cautious; and if any pain is given, or obstruction met with, we must withdraw for a moment (precisely as we would if any check occurred in the introduction of the male catheter), but never attempt to pass on the instrument by force. The first blade, having been properly placed, may be held by an assistant, and the forefinger of the left hand then introduced between the perineum and head along which the second blade is to be passed as far, and with the same precautions as before mentioned, taking care that it is exactly opposite to its fellow. We may now proceed to lock, by holding the second blade stationary, and withdrawing the first to meet it, taking care that no hair or soft parts intervene, and that we cause the handles to pass each other with their locking sides properly opposed. We may then tie the handles together with a running knot, which will admit of being easily loosened. When the forceps are properly applied, with the blades over the child's ears, and their points at the chin, their handles will approach to within one half or three fourths of an inch to each other; if they are more distant, it shows that the points have not been passed far enough; and if they approach closer, the head has not been properly grasped between them.

In working with the forceps we should take advantage of any pains that may exist, and extract during their occurrence ; or, if the uterus be quite inert, we must imitate nature, and allow an interval of rest between each of our efforts. Often, the mere introduction will excite a pain, and we may then move the instrument slowly and steadily from the perineum towards the pubis, using at first scarcely any extractive force. When the pain returns, or (if there be no pains), after a short interval, we may, in the same manner, bring the handles back to their former position. This alternate motion, backwards and forwards, is to be persevered in, employing gradually a slight increase of extractive force (which should be always applied in the direction indicated by the handles), and acting always from one blade toward the other. As the head descends, and turns into the sacrum, the position of the blades will, of course, change, and we shall have to act from side to side, instead of from before backwards. To allow of this change, we must let go the handles (or hold them very loosely), between each of our efforts.

The time to be occupied by the extraction will, of course, vary according to the difficulties of the case ; safety should never be sacrificed to speed ; and we should always pay the closest attention to the supporting of the perineum, which is frequently injured by careless operators. After the head has been extracted, the rest of the labour will probably be accomplished by nature, and, if possible, should be left in her hands : if she be quite powerless, we

shall be obliged to assist in the extraction of the body.

When the employment of the forceps is advisable in the varieties of natural labour, they should be applied in the same manner over the ears, the same general rules applying to their management.

Vectis.—This instrument, in its most simple form, is nothing more than a single blade of the forceps, deprived of its lock, and a little more curved than usual. The mode of introducing it is precisely similar to that recommended with the first blade of the forceps, and it should occupy exactly the same situation upon the side of the child's head and face. In acting with it, we convert it into a lever of the first order, grasping its handle firmly with our right hand, and making a fulcrum of our left: at the same time using some extractile force, and taking great care that we do not allow the labium to have any share in the office of supporting the centre of the instrument.

The vectis must be used at intervals, like the forceps, and, if possible, during pains. As the head descends, and gets with the face into the hollow of the sacrum, its position will of course be changed from the front to the side of the pelvis. Dr. Lowder contrived an instrument somewhat more curved than the ordinary one, and called, from him, Lowder's lever, which he recommends to be introduced—first, over the occiput, and subsequently, when the face turns into the sacrum, to be withdrawn, and re-introduced over the face and chin. I am not aware that this plan possesses any

real advantages over the ordinary mode of using the vectis.

By some authors, the propriety of using the instrument as a lever has been impugned, and its name has been attempted to be changed into "extractor." This doctrine has been of essential service, so far as it points out the danger of using the soft parts of the woman as a fulcrum; but a very little reflection must show, that, curve a vectis as you will, it cannot act simply as an extractor upon a globular body like the child's head, and that it can have no other action than that of a lever. The whole difference consists in making a fulcrum of the left hand, instead of the labium, and this should never be forgotten.

Much dispute has arisen as to the comparative merits of the forceps and vectis. The safest conclusions appear to be, that either instrument may occasionally be employed by competent persons with perfect safety; secondly, that the forceps will sometimes succeed (from giving a more powerful purchase) where the lever will not; and, thirdly, that, the vectis being more capable of secret and early use, there are more temptations to its improper employment; and, *ergo* (as we are all fallible), it is less advisable for a practitioner to familiarize himself with it.

The fillet is not now used in midwifery, excepting occasionally in breech or footling cases.

* * Dr. Joseph Clarke found it necessary to employ the forceps in the Dublin Lying-in Hospital

once in 728 cases: he estimates the necessity for its use in private at one in 1000. In the Wellesley Female Institution, the proportion of forceps cases has been about the same.

[Merriman in 2947 cases applied the forceps twenty-one times. Bland in 1897 cases only nine times. At Maternité in 20,357 cases the forceps were used in ninety-six.]

Perforation of the head.—In performing this operation, the same rules are applicable, with respect to the patient's position, and emptying her rectum and bladder (if possible), as have been stated in the preceding pages. The instruments necessary are the perforating scissors and crotchet, which are to be heated in warm water, and placed in a situation convenient to the hand of the operator. The latter is then to sit down quietly and deliberately beside the patient, introduce two or three fingers of his left hand into the vagina, and place them upon the presenting part of the head, ascertaining, by pinching the hair of the scalp between his fingers, that nothing whatsoever intervenes. The assistant, who stands at the woman's back, should press upon the uterus, so as to steady it; and the operator may pass up the perforator, with its point moving along his fingers, until it meets the head. Surrounding the point with two of his fingers, he is then to perforate the skull with a boring semi-rotatory motion. If the child be living, a considerable flow of blood will sometimes take place from the scalp, but as it is usually dead, this sel-

dom occurs. When the skull is perforated, of which the cessation of resistance makes us at once aware, we are to push on the instrument steadily until the stops meet the bone : we are then to grasp one of the handles, and direct the assistant to separate the other to its full extent. This having been done, the instrument is to be again closed, turned, and separated in another direction, so as to make a crucial opening. During the separation the stops should be kept firmly in contact with the bone, otherwise the points might be withdrawn from the cavity by the shortening consequent upon their separation. The next step is to pass the perforator, stops and all, into the brain, and turn it about in all directions, so as completely to break up its mass. This should be carefully attended to, both for the purpose of lessening the bulk of the head, and to prevent any chance of the child's being born with a spark of life, an accident which occasionally has happened, and given rise to much unpleasant feeling.

Some persons recommend a delay of five or six hours after perforation to let the head collapse before finishing the delivery ; but, unless in cases of very extraordinary deformity, I can see no advantage in this practice, and its adoption has always a depressing effect upon the mind of the woman. When the brain has been well broken up we may withdraw the perforator, and then, having removed with the fingers any loose pieces of bone, and turned the torn edges of the scalp into the opening, the crotchet may be introduced, guided upon the fingers

of the left hand. Its point is to be fixed in the bone, and we may prepare for extracting, which, if pains exist, should be done during their continuance, and by steady efforts, allowing an interval of rest. While we extract we should place our fingers on the head opposite the point of the instrument, so that, if it slip, it may rather injure our hand than the patient's vagina. We should also rest our elbow upon the bed and act chiefly from the wrist, so that a slip may not be attended with any sudden jerk. The amount of force required must vary much, according to circumstances; the great thing is, to employ it steadily, and in the direction of the axis of that part of the pelvis in which the head is situated at the time. We shall sometimes have to persevere for a considerable period before we get over the obstruction, after which the rest of the business will probably be speedily effected.

In cases of extreme distortion, the bones of the cranium may come away piecemeal, and it may become necessary to perforate the thorax, and eviscerate it and the abdomen. When an operation of this kind is required, it is attended with great danger, and all our care will frequently be insufficient to protect the vagina against injury from the broken ribs. Forceps intended to supersede the use of the crotchet have been devised by Dr. D. Davis and others, and I think may often be used advantageously. I have, however, always found the latter instrument to answer my purpose without ever doing mischief, and I must confess myself to be no

lover of innovation, unless it be attended with manifest improvement.

After either crotchet or forceps operations, the greatest attention must be paid to prevent retention of urine, which, as well as incontinence, occasionally occurs. It is often advisable to give an opiate; and all the minutiae of management, of which we shall afterwards speak, must be attended to with double strictness.

* * Dr. Joseph Clarke found it necessary in the Dublin Lying-in Hospital to use the perforator once in 208 cases. In the Wellesley Female Institution it was employed during the year 1832 once in $211\frac{1}{2}$, and during the year 1833 once in 137 cases.

[Of Merriman's 2947 cases, nine required the perforator; of Bland's 1897 cases it was used in eight; at Maternité in 20,357 cases only in sixteen.]

Section of the symphysis pubis.—This operation was proposed by M. Sigault of Paris (in the year 1768), as a substitute for both perforation and the Cæsarean section. In performing it, a catheter is to be introduced into the urethra, and the integuments and symphysis of the pubis to be then divided with a scalpel, from above downwards to within a quarter of an inch of the lower edge of the joint. The thighs are then to be separated, and the bones forced asunder. The symphysis cannot be separated to more than an inch without tearing the

sacro-iliac joints (an accident always fatal), and as this increase of size would not answer any useful purpose, in a pelvis so deformed as to require the Cæsarean section, of course the Sigaultian operation cannot be a substitute for the latter.* I hope no one now-a-days would be mad enough to propose dividing the symphysis, in a case where it would be *possible* to deliver with the perforator and crotchet.

Cæsarean section.—In cases where the pelvis is so extremely deformed as not to permit the extraction of a child diminished by the perforator to the greatest possible extent, the only alternative is the Cæsarean operation. From Dr. Osborn's observation, already quoted, it appears that a child was extracted, by the crotchet, through a pelvis measuring at the widest part from before backward only one inch and three quarters; accordingly, it may be laid down as a rule that the operation is only required when the measurement of the pelvis falls short of this amount; and, as impregnation under such circumstances is unlikely, it follows that a necessity for the section must be very rare. The truth is, that in Great Britain the operation never did and never will flourish.† In Roman Catholic countries

* Mr. Simmons, of Manchester, proposed that section of the symphysis and perforation should be employed together in extreme cases; but surely the Cæsarean operation, by giving a chance to the child, must be preferable to this double murder.

† Of twenty-five cases, twenty-four mothers perished.—*Meriman on Difficult Parturition.*

it has had better success, because in them it has been performed when, according to the rule above stated, it was not required; being patronized by the clergy, in opposition to perforation, from their unwillingness to sanction the death of a child unbaptized.

The mode of performing the operation is by an incision through the *linea alba*, as *semilunaris*, six inches in length, exposing the uterus; the arteries are to be secured, and a second incision made through the walls of the womb, merely large enough to admit the passage of the fœtus; through this the hand should be passed, the membranes ruptured, and the child, and afterwards the placenta, quickly extracted. During this time the assistants must carefully prevent the protrusion of the intestines, by keeping the abdominal walls pressed close to the uterus. If the uterus does not contract, the hand must be passed in to stimulate its cavity. The wound in the womb is to be left to nature, that in the integuments must be secured with sutures and adhesive plaster.

Before the commencement of the operation, the bladder should be emptied, and an attempt made to ascertain the situation of the placenta by means of the stethoscope. If we succeed in learning its exact site, we must make our incision so as to avoid it.

[The Cæsarean operation has of late been performed successfully in quite a number of cases; by Michaelis, of Keil, five times in the same woman; by Dr. Gibson, of Philadelphia, twice; by Dr. R. K.

Hoffman, of New York, once, and by other operators on the continent of Europe, and in the United States. It has, in fact, lost many of its terrors, and is now contemplated every where except in England, as one of the recognized means of delivery, and not as a *refugium miserabile*, a mere desperate experiment, only to be thought of when every other means have failed, and every rational hope of life is lost. The circumstances to which continental and American accoucheurs owe their success appear to be, that they have operated *earlier*, before the strength of the woman has been prostrated, and her system rendered irritable by the long continuance of labour pains, or by violent and protracted attempts at delivery, *per vias naturales*. When attempted under such circumstances, and performed with requisite skill and promptitude, the experience of living accoucheurs establishes the facts, that the Cæsarean operation, so far from being in the words of a late English reviewer, "almost certain death," will succeed in a fair proportion of cases. It is a formidable, *a very formidable* operation, not to be undertaken rashly, nor by an incompetent surgeon, but, on the other hand, if well timed and well performed, it is a valuable means of saving life, not to be idly decried, nor yet restricted to desperate or hopeless cases.

A British writer suggests the propriety of dividing the Fallopian tubes, when the Cæsarean operation is performed, that thus the woman being rendered barren, might be guarded against the possibility of requiring a repetition of the terrible Cæ-

sarean section. This suggestion deserves mature consideration.]

When an individual woman has been frequently delivered by perforation of the child's head, it becomes an object to devise some means for obviating these successive sacrifices ; and accordingly it has been proposed in such cases to induce premature labour, at a period of gestation when the child is sufficiently small to pass through the pelvis.

This is a step by no means to be lightly undertaken, as there must always be a certain degree of danger incurred by the mother ; and the act itself, unless it can be justified by a powerful necessity, is unwarrantable, and even criminal in the eye of the law. The mode of performing it is simply to rupture the membranes with a sharp-pointed probe, and allow the waters to drain off. Dr. Merriman has published some rules, the substance of which we shall state as conveying all the information that is useful upon the subject :—1. To give the child a chance of life, the operation never should be undertaken before the seventh month. 2. It never should be adopted, until we know *from sufficient experience* that the mother cannot produce a full-sized child. 3. The woman should be free from general disease. 4. If the presentation be preternatural, its propriety is doubtful. 5. The strictest precautions against fever (varied according to circumstances) must be adopted. 6. A wet nurse should always be ready for the child. 7. *On no account should it be done without a consultation as full as can be procured.*

[Ramsbotham has tried ergot as a means of induc-

ing premature labour, and finds, that after a few doses of the infusion, given at intervals of four or six hours, the pains of labour set in and the birth was completed without manual aid. But though the mothers recovered as well after the operation thus performed, as in any other way, yet a larger proportion of the children were still-born. This led him to modify the practice, and he now gives four or five doses of the infusion of ergot and then ruptures the membranes. He generally finds that the os uteri has become soft and somewhat open under the operation of the drug. The number of live births has increased in his practice, since he resorted to this modified use of ergot.

Another mode of bringing on premature labour is by separating the membranes for an inch or two around the os uteri, and removing the plug of mucus by which the os is usually closed. This plan is advocated by Hamilton and Conquest, but Ramsbotham says he has found it fail in most of the instances in which he has tried it. Kluge and Brunninghausen proposed introducing a sponge tent into the os, and confining it there by plugging the vagina. This plan is approved of by Velpeau, and adopted by Dubois, and other French accoucheurs.

This last method, or the removal of the membranes from around the os uteri, is preferable to the immediate rupture of the membranes, as, by resorting to them we avoid the great source of danger, pressure on the funis and the child after the evacuation of the liquor amnii. If they fail, however, and we are compelled to resort to rupturing

the membranes, it is certainly good practice to prescribe three or four doses of ergot.

A curious fact relating to this subject is that the proportion of *cross births* in cases of premature labour, whether natural or artificially induced is much greater than in labours at full time. Merri- man met with fifteen preternatural presentations in thirty-four cases of artificially induced premature labour. Ramsbotham reports fourteen in forty-one cases, and Dubois fifty-six in one hundred and twenty-two.]

* * Dr. Merriman relates forty-six cases of pre-
* * mature induction of labour, in all of which the
* mothers recovered, and sixteen of the children were
capable of being reared; five others were alive at
birth, but died shortly afterwards. Hamilton re-
ports forty-six infants born prematurely, of whom
forty-two were born alive. Ramsbotham forty-one
children—twenty-three living.

CHAPTER XIII.

PRETERNATURAL LABOUR.

THE term *preternatural* is applied when any part of the child, except the head, presents. The class has two orders:—1. Presentations of the breech, or inferior extremities; 2. Presentations of the shoulder, or superior extremities.

In the common parlance of the lying-in chamber, the term “cross-birth” is applied to both these orders; but, technically and strictly, it is only used for the second, when the child actually lies transversely in the womb. Presentations of the back, abdomen, and sides, are described by authors; but if they ever occur, *at the full term of gestation*, the same principles apply to them as to cases of the second order.

Various signs of preternatural labour have been mentioned, as, peculiar motions of the child and shape of the mother; slow progress of the first stage; early rupture of the membranes, &c., but the only certain information upon the subject is to be obtained by examination *per vaginam*. In some cases, at the very commencement of labour, we shall, even by this method, be unable to detect any part of the child; and then, certainly, the presumption is, that the head is *not* presenting. It is, therefore, incumbent upon us to watch the case carefully,

until, more progress having been made, we may obtain the necessary information, and lose no time in affording any assistance that may be required.

The marks of the different presentations are as follows:—*The head* is known from every other part by its hardness, sutures, and fontanelles. *The face* is distinguished from the breech by the forehead, by its features, and especially by the tongue. Of these two presentations we have already spoken. *The nates* are to be recognized by their globular shape, softness, and elastic feel, by the cleft between the buttocks, the anus, and parts of generation (especially in a male), and the free passage of the meconium. In a first and hasty examination, the finger may meet one of the trochanters, when the part is pressed firmly into the pelvis, and the skin tightly drawn over it; and I have known it, under such circumstances, to be, for a short time, mistaken for the head. *The shoulder* is to be distinguished from the hip by its smaller size, by the axilla and ribs, by the clavicle, scapula, and by the arm, which is, in a marked degree, smaller and more moveable than the thigh. *The foot and hand* are to be distinguished from each other by the greater thickness and length of the former, by the projection of the heel, by the shortness and evenness of the toes, and by the great toe not being, like the thumb, separable from the rest. *The elbow* can be known from the *knee* by its sharpness, and by the small size of the arm and forearm. All these things appear easy enough upon paper, or when we have a child quietly in its cradle; but when it is in the uterus it is quite another

affair, and tolerably-experienced practitioners are then not unfrequently at a loss. The way to prepare ourselves best against error is to improve our *tact*, and by giving ourselves the habit of feeling the different parts of dead or living children whenever an opportunity offers; and when we have occasion to exercise knowledge thus gained, we should proceed coolly and deliberately, without any affectation of extraordinary dexterity or greater skill than our brother practitioners.

Breech presentation.—The mechanism of parturition in these cases has been already fully explained.* At the commencement of labour there may be two varieties:—1. With the front of the child directed toward the mother's spine; 2. With the front directed toward the mother's abdomen: the latter considered the least favourable.

From the observations of Nagelè it is fully established that, in a great majority of instances, as the labour proceeds, the latter variety is converted by the pains (alone) into the former. More rarely the child is expelled in the second position, and then a degree of difficulty, requiring artificial interference, occasionally occurs.

The first stage of a breech case must be conducted precisely as in a natural labour; the practitioner should be even more cautious than usual in his examinations, lest the parts of generation should suffer injury. If every thing goes on well, nature, unassisted, should be allowed to expel the breech

* Vide p. 40.

and feet. If difficulty arises, it must be treated according to the rules laid down in the chapter upon difficult labour. The forceps or the perforator, in short, all the means there spoken of, may, under certain circumstances, require to be employed. When the breech has descended to a certain extent, if necessity for interference arises, we may exert a powerful extractive purchase, by passing a fillet (a common silk handkerchief answers very well) over the groins, between the belly and thighs of the fœtus, and extracting with it as we would with a forceps. A blunt hook is also sometimes used for the same purpose.* When the body is expelled as

* This is the only practical precept in this work from which the Editor dissents strongly. The cases are exceedingly rare in which it is necessary to expedite the progress of labour before the umbilicus is born. In the vast majority the slower the labour progresses up to that point, the more perfect will be the dilatation of the soft parts, and the less the danger to the child from pressure on the cord. To this danger from pressure the child is not exposed till the umbilicus has passed well into the pelvis, and the danger is not great till the head fairly enters the cavity. From these facts the practical inference is plain, we should not hurry, nay, within certain limits, we should delay the progress of the labour, till the umbilicus has passed the vulva, from that time the pressure on the cord is likely to be severe, and therefore, the remainder of the labour should be finished as soon as possible. The application of a fillet in the manner spoken of in the text, we think unnecessary, except in the cases of extreme and very urgent danger, as convulsions or the like, and to the blunt hook our objections are yet stronger—the danger of breaking the child's thigh is *extreme*. This use of the instrument is condemned by the judicious Merriman, who says he has never found it necessary. The bringing down the arms will rarely (Velpéau, Desormeaux, and Mad. La Chapelle say never) be re-

far as the umbilicus, we should draw down the funis a little, so as to prevent it from being stretched. If it continues to pulsate, we may still leave everything to nature. Should there be any difficulty in the escape of the feet or arms, we may bring them down cautiously, taking care not to let them jerk out, so as to injure the perineum. To bring down the arms, we pass a forefinger successively into the bend of each elbow, and then sweep the forearm slowly over the breast.

In many instances, the expulsion of the head will quickly follow that of the body, the face turning into the hollow of the sacrum, as in natural labour. If it should not, and the cord cease to pulsate, it becomes necessary to hasten the passage of the head, lest the child should be suffocated. The mode of doing this is, to pass the fore and middle fingers of the right hand round the back of the child's neck, so as to give it a degree of support, and at the same time to place the fore-finger of the left hand in its mouth, and depress the chin: by the latter manœuvre, we bring the head into the most favourable position for passing,* and at the same time, we perhaps make a channel along our finger, by which the air may have access to the child's mouth and chest. I have frequently known a child to breathe, with

quired,^r unless the feet are pulled at; if the fœtus is pushed out by the efforts of the uterus, the arms will remain folded upon the breast, their natural position, it is only when the child is *pulled out* that they rise along side the head, and present a formidable obstacle to labour.—ED.

* Vide pp. 31. 41.

the greater part of its head in the vagina. In general, by depressing the chin we soon succeed in withdrawing the head,* but sometimes a delay occurs, fatal to the child, and it may even occasionally become necessary to perforate the head, after the body has escaped.

[Where there is much delay in the passage of the head, especially if the cord begins to pulsate feebly, showing extreme danger to the child, the forceps or the lever should be instantly applied. It is an excellent precept of Professor Mcigs, always to get your forceps ready when you meet with a footling or breech case; have them at hand, so that if it become necessary to apply them it may be done at once. This is one of the cases where it will not do to trust too much to nature, the life of the child may be saved or lost as delivery is five minutes earlier or later.]

The perforator can, in such cases, be introduced behind the ear. In all extractions of the head, the perineum requires to be carefully guarded. When the belly of the child continues to be directed forwards, up to the period of the head's passing, some difficulty may arise from the chin hooking upon the symphysis pubis. It then becomes necessary to lay hold of the body of the child (covering it with a napkin), and to give it a slight inclination,† so

* The extraction is often facilitated by pushing up the occiput with the fingers of the right hand.

† In this manœuvre we must recollect, that it is very possible to dislocate the child's neck, and we should therefore employ force with suitable moderation.

as to bring the head into the oblique diameter of the brim: the further steps (depression of the chin, &c.) are to be conducted in the ordinary manner.

Footling Presentation.—This is to be conducted precisely as the breech case, and is liable to the same varieties. It is generally more fatal to the child, in consequence of the slow, wedge-like dilatation produced by the limbs not permitting the head to pass as quickly, as when the large, bulky breech has prepared the way for it. The funis is consequently pressed upon injuriously, before the lungs can be supplied with air. The best way, in any case, to secure the speedy passage of the head, will be to allow the body to be expelled as slowly as possible, and even not to interfere with the head so long as the circulation through the cord continues. Efforts at disengaging the head should be made, if time permits, during a pain, but if the child be dying, we cannot, of course wait for this, [but apply the forceps at once.]

* * * In 839 labours which occurred in the Wellesley Female Institution, during the years 1832 and 1833, there were twenty presentations of the lower extremities, or one in forty-two. In both breech and footling cases, a considerable proportion of children are still-born.

Second Order of Preternatural Labours.—In presentations of the shoulder or arm, the practice differs diametrically from that required in the first or-

der: interference being in the one as universally demanded, as it is in the other universally forbidden. The mechanism of these cases, and of the "spontaneous evolution," by which nature occasionally relieves them, has been already explained,* but it is very generally agreed, that when the child is mature, we cannot safely trust to the occurrence of this natural operation, and that it is incumbent upon us, in every such case, to offer artificial assistance. It is equally agreed upon that our interference should, if possible, consist in the introduction of the hand into the uterus, laying hold of the feet or legs, and bringing them into the vagina, in place of the arm or shoulder; in other words, turning the child. The circumstances of the case, however, may make a considerable difference in the facility, or even possibility of doing this, and may require variations in our mode of practice. The most favourable case is when we see the patient at, or are enabled to watch her until, the arrival of the exact moment when the os uteri is fully dilated, the membranes entire, or but lately broken, strong forcing pains not having yet commenced. If we are fortunate enough to find the patient in such a state, we should lose no time in turning.

The mode of performing the operation is as follows:—The woman is to be placed in the usual obstetric position,† and the operator sits or kneels

* Vide p. 41.

† The French position, upon the back, the nates resting on the edge of the bed, the feet upon chairs, supported by two assistants, while the operator sits between the patient's legs, is far

(as the height of the bed may render either posture more convenient) beside her. Either arm may be used: if we can ascertain* that the child's face is directed toward the mother's abdomen, the right hand will probably reach the feet more easily; if the face look backward, the left will then usually be more convenient. The choice of the arm, however, must chiefly depend upon the operator's own fancy; but whichever is to be employed, it must be completely bared† (the coat being taken off, and shirt sleeve turned up), and well greased or soaped in every part, except the palm of the hand, which should be kept as dry as possible, that it may retain a better power of grasping the child's limbs. These preparations having been made, the fingers, collected into a conical form, are to be slowly and gradually introduced into the vagina. This stage of the operation, until the broad part of the hand has passed the os externum, occasions consider-

more convenient. The English prejudice in favor of the "usual obstetric position" is a mere prejudice. In all these cases the physician should take care to protect his own dress, and also the carpet, by covering his knees with a sheet, and having plenty of old rags or the like, about his feet to receive the discharges. Besides the absolute importance of these things, attention to them has a good effect—it looks cool—and shows that the man knows what he is about, and knows it too, *in detail*.—ED.

* The direction of the child's face can be known by that of the palm of the hand and thumb, where these can be felt.

† We should not be satisfied with merely turning up the coat sleeve, as we can never know beforehand, how far it may be necessary to pass up the arm. The muscles also will be cramped in their action by the tight girding of the turned up sleeve.

able pain, and should be performed with great caution. When the fingers reach the os uteri, they must be passed in the same conical form into it, being guided upon the child's arm, when it is down, or otherwise upon the shoulder, to the front of its body, where we may expect to find the feet. In doing this, of course we rupture the membranes, should they still be entire; and our wrist then plugging up the os tincæ, and preventing the escape of the waters, we have, in the latter, a most advantageous medium, wherein to move about our hand, and seek for the feet. In searchig for these, as in every step of the operation, we should be cool, and in no hurry, acting with our hand systematically, and according to an imaginary picture of the child's position, upon which our mind should be intently fixed. If a pain comes on, we must cease, for the time, from moving our hand, and lay it flat upon the child's body, lest the projections of the knuckles should injure the uterus. If our arm becomes cramped, we may stop and rest for a little; a few minutes' delay making no difference in the success of the operation. When the feet or knees have been laid hold of we should carefully ascertain that there is no mistake,* and then withdraw them slowly, and with a wavy motion, out of the uterus. The subsequent treatment is precisely similar to that of a footling; some persons tie a garter upon the

* The second arm *might* be brought down in mistake for a leg; or, in twin cases, a leg of a second child. A little coolness will prevent either of these errors.

foot or feet as soon as they are brought down ; but this is not of any importance, as there is little danger of their returning again. Dr. Breen of Dublin recommends the knees to be brought down in place of the feet, and they are certainly, in general, easier to be found. Other practitioners think it preferable only to bring down one foot, supposing the case to be thereby more assimilated to a breech presentation, and the chances of the child's being born alive to be increased accordingly.

[The young practitioner will consult his own interest by obtaining the advice of an experienced friend, in his first cases of arm presentations. On no consideration is he to omit informing the friends of the patient that the child presents badly and that its life is in great danger. The operation of turning will be much facilitated by having an assistant seated upon the bed by the side of the patient, who should, while the operator is searching for the feet, grasp with both hands the uterine tumour, hold it steady, and gently press it downwards into the pelvis. When the feet are found, and the extraction begun, this downward pressure may be increased. In bringing down the feet care should be taken to make the heels present forward so that, the body and head following may pass in the most favourable way. This is a case in which the operator has to fix the presentation, let him see to it that it is the best. If the child is brought down with the heels to the sacrum, and, of course, with its back to the back of the mother, the chin will be almost certain to *hitch* upon the symphysis pubis,

and the delivery be attended with immense difficulty.]

In another variety of the circumstances of preternatural labour, we may have the membranes ruptured early without much dilatation of the os uteri.* If there be at the same time no violent forcing pains, we may wait a little, in the expectation of dilatation increasing. Should the uterine action be severe, means must be adopted for lessening it. If the woman be plethoric, we may bleed her; should this not be successful or advisable, a very excellent plan is, to administer a full dose of tincture of opium, say forty drops, and repeat it in half an hour, if the pains do not cease. By either of these plans, or by a combination of both, the contractions of the uterus will probably be lessened, and relaxation produced, sufficient to admit of the introduction of the hand. [The cautious use of tartarized antimony will sometimes materially and safely expedite the process of relaxation. A large emollient enema will contribute to the same end. The enema must not be stimulating, least it rouse the uterus to increased action. A mild enema (simple warm water is as good as anything) will produce relaxation, while at the same time it empties the rectum, a matter of

* When the membranes rupture early, the shoulder presenting, it is proper to keep the woman in the horizontal position all the time, in this way the draining off of the fluid will be prevented, and when we come to turn we shall still find a considerable quantity in the uterus by the presence of which the operation will be much facilitated.—ED.

great importance, and one which should never be neglected. Attention should always be given to the state of the bladder. Neither turning, nor, indeed, any other obstetric operation should ever be undertaken, without the practitioner having first satisfied himself that the bladder is empty. If there is the least doubt, the catheter should be introduced.] It is needless to say, that double caution is required in turning, under these circumstances.

[It every now and then happens when the liquor amnii is discharged, that the shoulder does not pass up, when the feet, or one of them, are drawn down, in such a case a fillet (a broad ribbon well oiled will do) should be passed round the foot, and held fast with one hand, while with two fingers of the other hand placed in the axilla of the child like a crutch, we push up the shoulder.]

In certain unfortunate instances, we cannot by our treatment stop the labour, or the fœtus has been impacted into the pelvis before we see the patient, or the latter may be deformed, and any of these conditions may prevent us from attempting to turn. We have then only the alternative of awaiting the chance of spontaneous evolution, or of delivering the child by perforation of its chest, and evisceration. In depending upon the former, we must be guided by the strength of the woman, and by the indications of the presentation, as to whether the process is likely to take place or not: if we find the shoulder passing out and forwards upon the pubis, and the side gradually descending more and more, we may expect its occurrence. If it be not likely

to take place naturally, evisceration will facilitate it, by admitting of a more easy doubling of the child's body. Some practitioners recommend in these cases separation of the head from the body, so as to admit of the extraction of the latter before the former; the other operation, however, is certainly the safest, usually answers very well, and is most generally adopted in this country.

Turning is seldom required before the eighth month of pregnancy, and never warrantable before the seventh: spontaneous evolution usually taking place easily, owing to the small size of the child. I have seen a living child born in this way about the sixth month of gestation.

* * * Four cases of presentations of the upper extremities occurred in the Wellesley Institution, during the years 1833 and 1834, being one in two hundred and ten. The child is very generally lost.

CHAPTER XIV.

ANOMALOUS LABOUR.—FIRST ORDER.—HEMORRHAGE.

IN the class of anomalous labour are arranged a number of cases very dissimilar, and which, in fact, have no relation to each other, excepting that of not coming within any of the three former classes. We shall divide it into the following five orders:—

1. With hemorrhage.
2. ——— convulsions.
3. ——— plurality of children.
4. ——— prolapsus of the funis.
5. ——— rupture of the uterus or vagina.

1. *Hemorrhage* from the uterus, in connection with pregnancy, occurs under various circumstances: it may be considered as divided into four species:—

a. In early pregnancy, usually attended with abortion.

b. In advanced pregnancy, from the sixth month until the birth of the child.

c. Between the birth of the child and expulsion of the placenta.

d. After the expulsion of the placenta.

Before going into these particular species, it will be well to have definitely arranged in our minds

the objects which we are to endeavour to attain in the treatment of every case of uterine hemorrhage. In the first place, then, we should have in view the general principle applicable to every form of hemorrhage, of tranquilizing and keeping tranquil the excited circulation; secondly, we must look to the peculiar operation by which uterine bleeding is restrained, viz. contraction of the muscular fibres, and consequent compression of the bleeding vessels that pass between them. Upon these two principles our whole treatment in every case is to be based.

Abortion.—When the uterus discharges its contents before the end of the sixth month, we say that the woman aborts or miscarries; if the expulsion takes place after this period, but before the regular term, it is denominated premature labour. Miscarriage is always accompanied with more or less discharge of blood, and, as the latter is usually the most prominent and perilous symptom, the subject naturally falls under the head of hemorrhage. It is a very common accident, and occurs frequently, in all ranks of life.*

The causes, of course, must be various: those which predispose to it, are sometimes general or local plethora, but much more frequently general or local debility;† an unhealthy state of the uterine

* Among the women attended from the Wellesley Institution, at least one in eight has previously miscarried.

† Debility in these cases (whether general or local) must be understood as affecting specifically the generative organs, as the extreme weakness produced by lingering diseases (e. g. phthisis), is not usually followed by abortion.

functions: disease or death of the ovum; and not uncommonly an obscure syphilitic taint in the constitution. In some women a kind of habit of abortion, at a particular period of gestation, seems to be established, which has been ingeniously explained by Mad. Boivin, upon the supposition, that in such cases the uterus has (in consequence of a former inflammation) contracted adhesions with the neighbouring parts, which prevent its enlarging beyond a certain limit. The exciting cause of miscarriage may be any thing, corporeal or mental, which produces a sudden shock or disturbance in the system, as, external injuries, unusual exercise, displacement of the uterus, violent passions, severe cough, drastic purgatives.

[Mercury, especially if pushed to salivation, will very often produce abortion. Dr. Davis says salivation is as certain to produce abortion as the use of instruments. This is stating the rule too strongly. Cases have occurred where no such effect has followed, even profuse salivation, but they are very rare. The use of opium in large or long continued doses, is very apt to destroy foetal life, and produce abortion, this is not as strongly insisted on by writers as it ought to be; from facts within my own knowledge, I have no doubt that opium has such a power, and, of course, should be used during pregnancy with great caution. Salivation should never be resorted to with a pregnant woman, unless she have syphilis, under no other circumstances is it justifiable.]

When a woman is about to abort, she generally

feels, for some time previously, a sense of weight and weakness in the loins and region of the uterus, followed by stitches of pain, shooting through the lower part of the abdomen, back, and thighs; occasionally, there is frequent micturition and tenesmus.* Accompanying these symptoms, or immediately following them, there is always more or less discharge of blood from the vagina. This blood coagulates (thus differing from the menstrual secretion), and is often discharged suddenly, and in quantities so great, as to reduce the woman to a state of extreme debility. When it occurs to any extent, we can seldom hope to prevent abortion; in fact, it cannot be of any considerable amount without an extensive separation of the ovum from the uterus, and consequent death of the former. Our prognosis, therefore, generally, should be unfavourable, as to the chances of preventing a threatened abortion, although by judicious management we may sometimes succeed in doing so.

In some instances the ovum is discharged with very little pain, and in a short period; in others, the process occupies some days, hemorrhage continuing more or less during the whole time, and not ceasing entirely until the ovum has been completely expelled. This latter fact makes us anxious to ascertain when complete expulsion has been effected, for which purpose we should have all the clots preserved and carefully examined. If we

* Dr. Ramsbotham thinks *sudden* disappearance of the morning sickness a very certain forerunner of abortion.

open them with a little attention under water, the ovum will be recognized as a semitransparent membranous bag, containing the fœtus floating in a clear fluid.* Parts of the ovum, as the decidua or embryo, will occasionally be expelled separately; and some mistake as to the former may arise from the resemblance frequently borne to it by a portion of the fibrine of coagulated blood. When the abortion occurs at a very early period of gestation, the ovum is so small that our best directed attempts to discover it will often be in vain.

The treatment of abortions must be of three kinds.

1st. *Treatment for the prevention of a threatened miscarriage.*—In certain cases, the premonitory symptoms already enumerated exist sufficiently long and remarkably to admit of our interfering in time to prevent actual abortion. In other instances, the hemorrhage and discharge of the ovum are almost simultaneous with the lumbar pains, &c. In the former case, our preventive remedies must depend a good deal upon the condition of the individual, and also upon the nature of any constitutional symptoms which may exist. There is generally some degree of febrile excitement, and if it run high, with a quick bounding pulse, and severe pain, and the woman be plethoric and young, blood-letting is required, and will occasionally be of remark-

* In very young ova the embryo is so gelatinous that it readily dissolves in the liquor amnii, and consequently cannot be seen.

able service.* The quantity to be drawn must entirely depend upon circumstances, and should be enough to produce a change in the symptoms. Generally accompanying a plethoric state, we have evidence of gastric derangement, viz. constipation, nausea, foul tongue ; sometimes there are headache and rigors. These symptoms indicate a necessity for purgatives, which should be of a saline and cooling description.†

In many forms of threatened abortion, where there are no symptoms of general plethora, but the patient suffers considerably from pains, we shall find great advantage from the employment of opium, when the bowels are free, or have been opened by an aperient. A full dose, in draught or pill, may be given at once, or five or six drops of laudanum may be prescribed every hour, in an ounce of infusion of roses ; or, what is perhaps better, a small opiate enema may be administered. In general, I think, we shall find blood-letting less frequently called for than the latter plan. Under any circumstances, we must remember the principle of tranquilizing the circulation, and accordingly should enjoin perfect rest in a horizontal posture ; a rigid avoidance of every thing stimulating ; a cool room ; cool drinks ; and light bed-clothes. In addition to these means,

* It is only under the circumstances above mentioned that blood-letting is admissible. I believe it to be, in general, much too freely employed in abortions.

† A large enema of cold water often answers a valuable purpose, evacuating the bowels, and acting as a local refrigerant and sedative to uterine action.—ED.

when there is any bleeding, we shall find advantage from the application to the vulva of clothes wrung out of cold water or vinegar and water. The measures just recommended, should be diligently used while there is a chance afforded of preventing the accident.

[To decide whether there is any reasonable probability of preventing abortion in any given case, or whether it is absolutely unavoidable, is very important, and in many cases very difficult. The following rules will be useful to the young practitioner:—

If abortion is about to take place, the pains will return at pretty regular, and gradually diminishing intervals, and will increase in severity, and have a decided *bearing-down* character. On examination per vaginam, which should never be neglected or put off, as is too often done, we shall find the cervix softened, the os dilated, the membranes protruded during a pain; this protrusion of the membranes during a pain, is the best and a nearly unfailing diagnostic. If the true waters are discharged abortion is absolutely inevitable, but we must remember that a free discharge of serum may take place from the vagina, and yet the amnion be entire, the water being collected between the chorion and amnion, (false waters) or secreted by the glands about the cervix, which ordinarily elaborate mucus. If the symptoms of threatening abortion have been preceded by those which indicate the death of the foetus, the chance of arresting them is, of course, diminished. So, if they are obviously referable to

some predisposing cause, especially the habit of aborting. If, on the other hand, the symptoms have arisen suddenly, in consequence of some injury or accident, and the woman has never before aborted, we must not despair of saving the embryo—even though the pains be regular, and produce dilatation of the os, and protrusion of the membranes. Burns asserts that with these symptoms abortion is certain, but the experience of Desormeaux and La Chapelle prove that he is mistaken.]

Second Line of Treatment, for the purpose of bringing the patient with safety through the risks of abortion. The same general rules as to quietude, horizontal position, cooling aperients, &c., apply when we wish abortion to take place, as when we desire to prevent it. By some persons, ergot of rye is employed under these circumstances; but I cannot say I have ever observed any benefit to result from its use.

In many cases, the plan above recommended, if strictly persevered in, will be attended with happy results, and nothing more will be required; but should there be violent hemorrhage, and the assiduous application of cold cloths to the vulva and pubes* not be sufficient to check it, *plugging* must be re-

* I must here interpose a caution with respect to the inordinate use of cold; where the woman is hot, and the circulation excited, it is an invaluable remedy, but its employment may be easily carried too far (especially in a weak person), and dangerous collapse produced by it. The approach of this should always be attended to, when the cold applications must be removed, and heat applied to the feet.

sorted to. This is an excellent remedy, especially in early abortions, when the uterus is not large enough to admit of internal hemorrhage. It may be done with lint or a silk handkerchief, or (what, by entangling the blood, and promoting its coagulation, acts better than either) tow, or French wadding. Any one of these materials is to be saturated with vinegar or cold water, and then passed gently into the vagina, so as to fill without stretching it. A compress, wrung out of cold water, applied to the vulva outside, will keep the plug in its place, and in all probability the bleeding will be completely suppressed for the time. The plug should never be left in the vagina longer than twelve hours, as the coagula are likely to become putrid. Sometimes it will excite uterine action long before that period, and be expelled, together with the ovum. When we have occasion to remove the plug, if the flooding continues, a fresh one may be introduced. In its use attention must be paid, lest it should press upon or interrupt the passage of the urethra.*

* Our method of using the plug is different from that advised in the text. We use soft rags and saturate them with oil instead of vinegar or water; then, as to the manner of applying them, we introduce the rags bit by bit, pushing the first up to the os uteri, the next mass is to be crowded firmly upon this, and so on, till the vagina is full, till it is literally *plugged up*. This will usually excite some irritation, and very commonly provoke uterine pain, which is one of its advantages. Then, as to the time during which it should be allowed to remain, if it cause no irritation or pain, we think twelve hours too short, it may be kept, *in situ*, for double that time, without the slightest danger, from the putrefaction of the elois. In fact if the plug be used,

Frequently the embryo comes away, leaving the shell, or merely the placenta, in the womb; and some of the severest hemorrhages I have seen in abortions have been occasioned by a substance of this kind preventing contraction, and keeping the vessels open. In such a case ergot may be tried, but I confess I have little expectation of benefit from it.* It is a standing rule never to attempt introduction of the hand into the uterus before the expiration of the sixth month of gestation, but occasionally, by passing up a finger or two, we shall detect the offending substance sticking in the os tincæ, and be able to hook it away, when most likely the bleeding will instantly cease.

[The placenta hook of Dewees, which consists of a bit of stout wire, bent at one end, so as to form a small hook, will often enable us to bring away the placenta, or membranes, without the danger and difficulty which attend the crowding of even one

as above advised, there will be very little blood exposed to the air, almost all that flows will be confined to the cavity of the uterus.—ED.

* The distrust here expressed of ergot is not shared by American obstetricians, to whom the use of the drug is more familiar, and its powers better known. In all cases of retention of the placenta or membranes after abortion, ergot should be given, and that before many efforts at extraction are made, either with the fingers or the placenta-hook. If used promptly, it will not often disappoint the expectations of the practitioner. One great reason why ergot fails in these cases is, that it is not given till the system is so broken down by the loss of blood, that the vital powers do not respond to any stimulus, medicine cannot act; if, however, the article be given promptly, and be of good quality, it will not often fail.—ED.

or two fingers into the uterus. This instrument should, however, be used very carefully, and the point should not be sharp.]

In some instances, although there may be no loss of blood, there is the most distressing sickness and nausea occasioned by the distension of the os uteri in this way, which will be completely and instantaneously relieved by the manœuvre just referred to.

When the abortion is rather at an advanced period of pregnancy, the placenta is often retained for some days, in spite of all we can do to effect its removal. It then occasionally becomes the cause of putrid, fetid discharges, and I have known it to produce low uterine fever and death. We shall sometimes succeed in bringing away the placenta when it is retained in this way, by the administration of a brisk purgative or enema: if the discharges become putrid, injections into the vagina of tepid water or infusion of chamomile* must be frequently practised, and cleanliness very rigidly enforced.

The quantity of blood which women bear to lose in miscarriages is very remarkable. They rarely die from this cause, at all events before the end of the fifth month, although the prostration of strength is sometimes extreme.

Third Line of Treatment.—Practitioners are often consulted as to the means of preventing future

* Or, perhaps, injections containing chloride of lime might be found useful.

abortions in those who have already repeatedly undergone them. The plan of treatment must, of course, vary very much in different cases. If possible, we should ascertain the cause or causes which operated upon former occasions, and remove them by suitable means. The great object is, to bring the patient into a good state of health—in the plethoric this must be done by evacuations, exercise, low diet, &c.—in the debilitated, by tonics, cold bathing or sponging, nutritious diet, good air, avoidance of all emotions, &c. In some individuals there is a disposition to abort at a particular period of gestation; and this may occasionally be passed over with safety, by keeping them for a short time before and after in the horizontal posture, with perfect rest. This plan, however, must be adopted with caution, as the injury to the general health from confinement would in many cases be more prejudicial than allowing the patient to abort.

A very common cause of repeated abortions is a syphilitic taint in *either* parent. If this be ascertained, the treatment is obvious, but frequently its existence is very obscure. We very commonly meet with such a case as the following:—A man and woman, apparently both healthy, will marry, and the woman will abort, or prematurely produce dead children several times; every variety of preventive treatment is probably tried, until at last a living child is born, which shortly after birth shows unequivocal signs of being syphilitic, and the case is thus cleared up: all this time, probably, the woman has never had a single venereal symptom, and

the man not for years before his marriage. In some instances, there will be a succession of abortions, dead children, and syphilitic living ones. The remedy, under such circumstances, must be a steady, slow mercurial course, adopted, I am of opinion, with both parents—certainly with the one known to have had the disease.*

In managing a case of this peculiar description, it is needless to say that the medical man has occasion for all his prudence in order to avoid being the promoter of family quarrels: the ascertaining of the history of the matter is particularly difficult and delicate, and should be set about with the greatest caution.

b. Hemorrhage occurring from the end of the sixth month until the time of birth. This species is always occasioned by a separation of a portion of the placenta from the uterine surface, and consequently varies in quantity, according to the extent of the disunion. It has two varieties.

1st. *Accidental Hemorrhage*, when a casual rupture of the connecting vessels takes place, the placenta being in its natural situation, attached to the fundus or sides of the uterus. This form may be occasioned by blows, falls, over-exertion, &c.,† but sometimes occurs without any reason being evident. The whole or a part of the placenta may be sepa-

* In the present state of medical opinion, a man would scarce be justified in mercurializing the parent known not to have had the disease.—ED.

† Dr. Rainsbotham believes that it is rarely attributable to any apparent cause.

rated, and in some rare instances, the centre of the organ has been detached, and blood poured out between it and the womb to a fatal extent, while, the circumference remaining in connection, no discharge or a very slight one has been permitted to escape out of the uterus. Accidental hemorrhage may occur at any period of advanced pregnancy; if there be pains, the discharge will be diminished, not increased, during uterine action, owing to the compression that is then exerted by the fibres upon the bleeding vessels.

As we are never sure that there may not be internal bleeding, our estimate of the danger to the patient must be entirely drawn from the effect produced upon her system. At this period of pregnancy, the vessels are so very large, that a comparatively small actual loss of blood will, from the suddenness of its discharge, produce more effect than a much greater loss during the early months.

If the hemorrhage be slight, our treatment may in the first instance be confined to those means, already specified,* which have for their object tranquilization of the circulation. Should they not succeed, or the flooding be at first considerable, an examination must be made, to ascertain the state of the os uteri and the presentation. It is not advisable to be too forward in examining, unless the

* Cold, horizontal posture, saline aperients, mineral acids, &c., vide p. 70. Blood-letting, I believe, is seldom or never proper at this period of pregnancy.

hemorrhage be of consequence, and actually going on, as otherwise we may only reproduce it by disturbing the coagula, and the information required is often extremely difficult to be obtained by the finger during the seventh and eighth months, when the uterus has not yet descended into the pelvis. Should the hemorrhage still continue, the further treatment must be conducted upon the principle of promoting contraction of the uterine fibres and consequent constriction of the bleeding vessels. If we ascertain that the head or breech presents, it will generally suffice for this purpose to rupture the membranes with the finger nail or a probe, and allow of the escape of the waters. Pains will in most cases succeed this step, and effectually suppress the flooding: if they do not, or are weak, a dose or two of ergot and friction on the abdomen may be very useful in exciting or strengthening them.

In former times, the practice in accidental hemorrhage was, universally, to turn and deliver the child by the feet. Putting the hand into the uterus is, however, always to be avoided, if possible, and is not required, unless the uterus be absolutely inactive after the rupture of the membrans (a very rare case); or the presentation be a transverse one, which, on its own account, would justify the operation.

When labour proceeds, we must leave the case to nature, only paying double attention to the securing of a perfect contraction of the uterus after the child is born. Some gentlemen recommend the binder to be put on before delivery, but I prefer

trusting the pressure to my own hand, which would be only impeded in its access to the abdomen by the employment of the binder at this period.

The Second Variety, or unavoidable Hemorrhage, is so called from the circumstance of the placenta being unnaturally situated over the os uteri, whereby a laceration of its vessels and consequent bleeding is unavoidable whenever this opening comes to be dilated. The centre of the organ or a portion of its circumference may be attached to the os tincæ. In this form, the bleeding generally first occurs during the sixth or seventh months, at the period when the cervix is beginning to be developed; and may recur at intervals, yielding, from time to time, to the adoption of general measures. When labour arrives, however (and often long before), a severe and dangerous flooding *must* take place, calling for the promptest assistance from art.

The unavoidable hemorrhage is to be distinguished from the accidental by the discharge being increased in it during a pain, in consequence of the dilatation of the os uteri rupturing additional vessels, while, on the contrary, in the other, it is at the same period diminished, owing to the pressure then exerted upon the already open vessels. We should always, however, satisfy ourselves by vaginal examination that the placenta actually presents. It is to be known by its peculiar feel, and I know of no better way of instructing a student in this than to direct him to give himself the custom of handling every placenta which may come within his reach.

By doing so he will in a short time acquire a tact which it would be hopeless to attempt conveying by words.

The principle of treatment in a complete placental presentation decidedly is, to effect a total separation of the organ, by delivering the woman as soon as practicable. Whenever, therefore, we ascertain a case to be of this nature, we must carefully watch it, and seize upon the proper time for artificial interference; that is, when the os uteri is so far dilated or dilatable as to allow of our passing up our hand, turning the child, and delivering by the feet. If the hemorrhage has commenced long before the period of labour, we shall probably have to wait some time before this state is arrived at—and a most anxious and harrassing waiting it is. The patient must be closely watched, the ordinary hemorrhagic remedies employed, and, if these do not succeed, plugging adopted. I think I have seen the latter measure do excellent service, restraining the flooding most effectually, and also exciting the os uteri to a speedy dilatation. The objection to it is, that there may possibly be internal hemorrhage during its use, but, if the vagina be well filled, this does not appear very likely to take place, as the placenta itself, when covering the whole os uteri, forms an excellent plug upon that side. At all events, when the plug is employed, the closest attention must be paid to any effects that the bleeding may produce upon the constitution, whereby we shall obtain timely notice of any internal loss. If the woman retains her strength, we may

wait until some dilatation takes place, but should she be weak, it is our duty to attempt the operation before she sinks, as soon as we consider the parts to be sufficiently *relaxed*, even though they may not be dilated. When there has been much bleeding, the probability is that the parts will not afford a firm resistance, and the case is always one requiring prompt aid.

In performing the operation, we introduce the hand, as slowly as we please, in the manner and with the precautions already laid down,* until it reaches the os uteri; it must then either be passed through the placenta, or by the side of it, into the cavity. During this step, the operator has need of all his coolness and resolution. There is usually a frightful increase of hemorrhage, the blood gushing in torrents along his arm; if, panic-stricken, he withdraws for a moment, the woman is inevitably lost; but by pushing on boldly and steadily, he soon brings his wrist and arm, as an effectual plug, into the mouth of the womb, and the discharge immediately ceases. There is then time for consideration, and the feet must be deliberately sought for and brought down in the usual way into the vagina. There will seldom be any more hemorrhage, and the rest of the delivery is to be accomplished as in a footling case. The placenta will generally be found loose in the vagina: I have sometimes found it to come along with my hand and the child's feet out of the vulva. Great attention is necessary to

* Vide p. 181.

secure subsequent contraction of the uterus, and if the woman require it she should be supported with stimulants* during the operation.

Where there is merely an edge of the placenta attached over the os uteri, it will often not be necessary to turn. If we can ascertain that the head presents above it, rupturing the membranes may bring the former down so as to press upon the bleeding vessels, and there may be no further danger. It is often difficult to decide which step should be taken; it is certainly very desirable to avoid introduction of the hand into the uterus, but where any doubt as to the practice exists, it appears to me to be preferable to turn. In some case I have known the placenta to be expelled completely out of the vagina before the child, which, being driven by strong pains into the os uteri, effectually restrained the bleeding. In one case I saw a placenta completely separated and driven out of the uterus into the vagina, at the posterior part of which it remained until the child was expelled past it. Such cases as these, however, are mere exceptions, and afford no data for the establishment of any line of practice.

* * * The average of placenta presentations in the Wellesley Institution, during the years 1832 and 1833, was one in 167. The child is very frequently lost, and very great care is required by the mother, especially when she has lost much blood.

* One of the very best of these is burnt brandy.

Dr. Merriman thinks that phlegmasia dolens is a common sequela.

c. Hemorrhage occurring between the birth of the child and expulsion of the placenta.—The surest means of preventing this accident will be, to follow rigidly the directions given in the chapter upon natural labour for the management of the latter stages of the process. The great secret is, to promote and keep up permanently a full contraction of the uterus: if we can succeed in doing this, we shall seldom have to treat either hemorrhage or retained placenta.

The manner in which this form occurs is various. In some women, in whom will generally be found an excited state of the circulation towards the close of labour, flooding sets in immediately after the birth of the child, and by one immense gush quickly produces syncope. In others, a slow draining continues from the same period, until a similar effect, or alarming prostration of strength, ensues. Again, in a third case, the uterus contracts very well, and continues contracted for some time, when it relaxes, and flooding takes place with more or less violence.

In all these cases, the two principles already laid down must guide our conduct; friction and pressure must be made over the uterus, to excite its contraction, and the circulation must be quieted by throwing off the bed-clothes (excepting a light sheet), removing the pillow from the woman's head, so as to lay her perfectly horizontal, and opening the window, to admit fresh air and cool the apart-

ment. Cold cloths may be applied to the vulva and pubes, with a view of answering both intentions, cold quieting the circulation, and being a powerful stimulant to the uterine fibres. When sent for to a case of hemorrhage, I have often succeeded in procuring immediate uterine contraction, by placing my hand (cold from having been in the open air) upon the abdomen, which the attendant (heated by his anxiety) has been in vain pressing upon it with all his force. Where simple application of cold does not succeed, accompanying it by a shock, as by pouring a jug of water from some height upon the lower part of the abdomen, will often be very beneficial. Introduction of ice into the vagina has been recommended by some; but where are we to get ice quickly enough to be of use in a case of violent flooding? Should these plans not succeed in checking the discharge, we must, as a *dernier resort*, introduce our hand into the uterus, both for the purpose of stimulating it to action, and to remove the placenta, which, being partially or entirely detached, may prevent contraction, and keep the vessels open. The further management of this variety of hemorrhage we shall consider in the course of our remarks upon retention of the placenta, which, from the close connection of the two subjects, may be introduced here.

Retention of the Placenta may be occasioned by three causes:—1. Want of contraction in the ute-

* As has been before observed, we must beware of going too far with cold.

rus; 2. Irregular action of the fibres, producing hour-glass contraction; and, 3. Morbid adhesion of the organ to the uterus.

If the labour be conducted in the way recommended in the foregoing pages, the first two causes will very seldom exist. The first very generally arises from interference in hastening the birth of the child's body, whereby the stimulus is withdrawn too soon from the uterus, and it is left empty and without any thing to excite its contraction. The same effect often follows, when the womb itself expels its contents too rapidly. On the other hand, when a labour has been very tedious, the uterine fibres are fatigued, and require rest for some time before they again act. Irregular contraction is generally occasioned by injudicious attempts at extraction by the funis, which, without producing the desired effect, irritate the fibres of the cervix, and excite them to contract spasmodically, thus imprisoning the placenta. This condition is termed hour-glass contraction, on account of the chambers above and below formed by the uterus and vagina, and connected by the contracted cervix. Morbid adhesion is an occurrence over the production of which we have no control.

Under ordinary circumstances, we need not be uneasy about a delay of an hour or two, in the separation of the after-birth. But if hemorrhage should occur, or the retention continue longer than we deem safe,* not yielding to the friction, &c.

* It is not easy to specify a precise amount of time, the lapse

already recommended, we must proceed to introduce the hand. Before resorting to this measure, we may try the *ergot*, which sometimes succeeds. The introduction of the hand is to be conducted in the ordinary way,* moderate pressure being made upon the abdomen by an assistant, while we are doing it, and the funis put upon the stretch by one hand, so as to serve as a guide for the other.

In any instances we shall find the placenta partly expelled from the uterus, but with a portion of its edge caught and firmly grasped by the os uteri: sometimes it lies within the cavity, quite separated. In either case it is likely that the mere irritation excited by the hand, will cause both itself and the placenta to be forcibly expelled. If the uterus be quite inactive, and flooding exists, we must not withdraw our hand until some action has been excited; occasionally, it will be necessary to promote this, by moving about in the cavity, or even rubbing with the other hand, or employing an assistant to rub, strongly upon the abdomen. When there is morbid adhesion, the fingers must be spread out from the funis, towards the edge of the placenta, and insinuated between it and the uterus, so as to separate the one from the other; every caution must be used to ensure the *complete* removal of the mass. When there is hour-glass contraction, the

of which warrants manual extraction. I should be disposed to say that two hours after the birth of the child would be quite long enough to wait.

* Vide p. 181.

spasm must be overcome, by introducing cautiously finger after finger into the constricted part, until the whole has been dilated so far as to allow of the removal of the placenta. The length of time which this requires is often very great, and no one whose hand has not painfully experienced the power of the uterine fibres, could believe that so much resistance would be opposed. The average occurrence of retention is very small, if the latter part of the delivery of the child be conducted properly, and without any unnecessary interference.

d. Hemorrhage occurring after expulsion of the placenta.—In some instances this is occasioned by the after-birth being removed too hastily, before the uterus is inclined to contract. In others, the uterus relaxes, probably after it has naturally and very quickly expelled the placenta. This form of flooding will be very generally prevented by avoiding the first mentioned cause; by preventing subsequent relaxation by friction, the use of the binder, &c.; and by keeping the circulation quiet, after every labour, by the most strict enforcement of rest in the horizontal posture.

When it does unfortunately occur, notwithstanding our precautions, the principle upon which it is to be restrained, is still the promoting of uterine contraction, which is to be effected by friction, pressure, cold, ergot of rye, &c.: or, if these do not succeed, introduction of the hand. Coagula may have collected in the uterus, keeping it open, and upon their removal by the hand, contraction

may permanently ensue.* This should be kept up by a very tight application of the binder, with a compress between it and the lower part of the abdomen.

In some cases, especially where the binder has not been well applied, hemorrhage may go on into the cavity of the womb, without a drop appearing externally. Under such circumstances, nothing may be known about the matter until the woman's lips are observed to be getting pale, her pulse weak and rapid, and she becomes restless, tossing her arms about, and complaining of want of light and air. The practitioner may have left her, and things have gone to this length before he can be recalled. When he lays his hand upon the abdomen, he will probably find sufficient cause for the symptoms, in the size which it has attained from the accumulation of blood in the uterus. Pressure may succeed in stimulating the uterus to contraction and expulsion of the coagula; but if it does not do so immediately, we have no time to lose, and must instantly pass up the hand and excite action. When such dangerous prostration of strength as that described has taken place, it will be necessary to support the woman's strength by stimulants. Burnt brandy or whisky I have found to be the best that I have

* The introduction of the hand for any such purpose as exciting contraction, or removing clots, is condemned by many of the best authorities; it will always do some harm, and very rarely, as I think, do any good. If done at all it should only be in the last extremity. The dashing of cold water on the uterine region is a more efficient, and infinitely a safer remedy.—Ed.

tried. A tea-spoonful of it, with from five to ten drops of laudanum, may be given every quarter or half hour, until the patient rallies. Of course the strictest rest must be enjoined, dangerous syncope and even death having been known to follow the mere raising of the head under such circumstances.*

In the treatment of all forms of hemorrhage, large doses of opium have been very much recommended. Excepting in small quantities, as a stimulant, when collapse was to be dreaded, I have not been in the habit of using it. It may no doubt be useful in spasmodic contraction, but I apprehend it is rather too much to expect from any drug that it will obey our pleasure, in relaxing the uterus when we wish to turn a child, and in causing it to contract when we desire the expulsion of the placenta.

Inversion of the Uterus.—This subject, being somewhat connected with that of hemorrhage, may be considered under the same head. It is an accident that occasionally occurs spontaneously, in consequence of extraordinary action of the uterus, but more generally is caused by rude attempts at extraction of the placenta. In a recent state it can scarcely be mistaken for any thing else, except perhaps a polypus; from which a careful examination will distinguish it by its greater sensibility, its com-

* The extent of debility from which a woman may recover is very remarkable: I have known a patient, who ultimately did well, to continue in a succession of fainting fits for twenty-four hours.

parative immobility, its want of a pedicle, and the manner in which the finger is prevented by its reflection from passing upwards by its side. It will also probably have the placenta attached to it, and be bleeding profusely. In a chronic state it may be confounded with a prolapsus of the uterus, but can be diagnosed from it by its want of an os tincæ.

The obvious treatment in inversion of the uterus is to replace the organ immediately, as re-inversion becomes soon impracticable. The mode of doing it is to bare and grease the arm, and then place the clenched hand against the fundus, and carry it upward until the organ is completely replaced. The hand should not be withdrawn until the uterus is well contracted. Some persons recommend the uterus to be returned without removing the placenta, lest there should be sudden and dangerous hemorrhage before that object could be accomplished. Dr. Merriman relates a case in which he was unable to replace the part until he removed the placenta, after which he succeeded perfectly. Having never seen a case of recent inversion, I can give no opinion as to the relative merits of the two courses. The consideration of chronic inversion of the uterus does not come within our present limits.

CHAPTER XV.

ANOMALOUS LABOUR.—SECOND ORDER.—CONVULSIONS.

THIS is one of the most dangerous, although fortunately not a very common complication of parturition. Convulsions may occur, either before labour commences ; during its progress ; or after it has been perfectly completed. The attack is sometimes preceded by premonitory symptoms, indicating congestion within the cranium, as headach, vertigo, stupor, flushed face, numbness of head, arm, &c. ; at other times there is nothing whatsoever to give notice of its approach.* They occur equally in first and in subsequent labours, and are, according to my observations, particularly dangerous and fatal in the latter.†

* I recollect once seeing a fatal case of convulsions, in which the woman was seen three hours before the attack, and complained merely of pain in the epigastrium, without any head symptom whatsoever.

† Perhaps some explanation of this may be found in the supposition, that in first cases convulsions depend chiefly upon sympathy of the nervous system with the *unusual* actions going on in the birth passages, while in subsequent labours they may more commonly have their cause in some *organic* disease.

[Both the opinions here expressed are contrary to those of the mass of writers, who generally assert that convulsions are more common, and more fatal to primi-parient females than to others.]

The symptoms of convulsions resemble very closely those of epilepsy; the face is shockingly contorted, either quite pale and leucophlegmatic, or livid and bloated; the muscles are violently convulsed, and sometimes become so rigid, that I have seen a woman placed upon her side during a paroxysm remain in that position without support; the tongue is protruded and often bitten in the spasmodic motions of the jaw, so that the saliva, which is blown in froth from the lips, becomes tinged with blood; there is sometimes a rattling in the throat, and generally a sharp hissing noise, produced by the rushing of the air, in breathing, through the frothy saliva. The patient is quite insensible, and when (after an indefinite period) the convulsion ceases, a deep sleep or rather coma succeeds, often with stertorous breathing, and continues for some time, when, if the paroxysm does not recur, she slowly recovers recollection, and complains of headache and soreness in her limbs. The countenance is heavy and stupid, and the voice hoarse and altered. The pulse differs in different cases, being sometimes quick and strong, at others weak: before the fit it is often remarkably slow. As the disease increases, the return to sensibility between the fits becomes less marked, until at last there is no interval of perception.

Convulsion cases occur very much in groups at certain times, and Dr. Ramsbotham has observed that they are particularly frequent in hot sultry weather, before thunder storms.

The pathology of this affection is not well under-

stood: morbid anatomy has not hitherto thrown any certain light upon it. In some instances it appears to be a nervous affection, depending upon the dilatation of the birth passages, and combined with a state of plethora, and unhealthy condition of the intestinal canal. In other cases, it is probably connected with organic diseases of the brain.

From the state of the pathology, we may infer that the treatment is not well defined. That which, upon the whole, appears to have had the best success, is the depleting plan, but it certainly is not universally applicable. When the woman is plethoric and strong, with a quick and bounding, or a full, slow pulse, bleeding is unquestionably indicated, and from $\text{̄}xv$ to $\text{̄}xxv$ of blood should be drawn from the arm in a full stream: if this appears to be of service, and the blood is inflammatory, it may be repeated as long as it is evidently required; or the temporal artery may be opened.* At the same time the head should be shaved, and a cold evaporating lotion or an ice cap applied to it. When the patient is not plethoric, but weak and rather hys-

* The amount of bleeding advised in the text will not control convulsions in plethoric women; and the experience of the best writers and teachers, assures us that a very much greater quantity of blood than here spoken of may be taken with advantage. Burns speaks of eighty ounces having been abstracted with advantage. Denman, seventy. Dewees says, "I bleed till I abate the severity of the fits, or arrest their repetition. This may be effected by taking 30 or 40 ounces, or it may require one hundred." In one case Dewees took 120 ounces in six hours, and twenty ounces afterwards. Blundell took 70 ounces in three hours.—Ed.

terical, with a feeble, rapid pulse, the depleting system cannot be proceeded upon with so much confidence. Even then, probably, it will be well, to try the effect of a small bleeding, and the appearance of the blood will be a good guide as to whether we should proceed. In a doubtful case, I should certainly be disposed to lean to the side of depletion. I have never seen a case of convulsions recover unless the bowels have been got to act, and then the secretions have been always depraved; therefore I think the use of purgative measures never should be omitted. A bolus of calomel and jalap* may be laid upon the tongue, and followed by a purgative mixture,† if we can get the patient to swallow. [Two drops of Croton oil, mixed with a little butter or sugar, and put on the back part of the tongue will generally find its way down and operate well.] At the same time a purgative enema, containing an ounce of spirits of turpentine, may be thrown up. During the paroxysm Dr. Denman strongly recommends dashing the face with cold water, and it certainly often appears to shorten the fit.‡ A solution of tartar emetic has lately been

* R Calomelanos gr. v., Pulv. Jalapæ gr. x., Conservæ Rosarum q. s. ut fiat bolus.

† R Inf. Sennæ ʒ vj., Sulph. Magnesiae, Tincturæ Jalapæ aa ʒ 3vj. M. Sumatur ʒj. 2a quâque horâ ad effectum.

‡ A better plan is to allow a stream of water to fall from a heighth (through a large funnel is a good way) upon the shaved head. The influence of cold water made to act in a constant stream, and to fall with some force upon the head, in controlling the circulation in the brain, is not appreciated by practitioners generally. I have sobered a man who was "dead drunk" in ten

recommended, in nauseating doses, and I have sometimes thought that it produced good effects.

The foregoing plans apply to all varieties of puerperal convulsions ; but when they occur before or during labour, a question arises as to whether or not the woman should be delivered. The solution of this question depends very much upon circumstances : if the woman be actually in labour, and sufficient advance made to admit of the application of the forceps, it will generally be advisable to deliver her ; but I think no operation, neither turning nor perforation, ought to be attempted while the os uteri is rigid, and a risk exists of injuring it, and thereby increasing irritation.

[Delivery sometimes takes place very suddenly, during a convulsion, and, of course, without the consciousness of the patient. This fact should teach us to make frequent examinations per vaginam, to note the progress of labour, lest the child should be born and perish from neglect, before we are aware of the accident.]

Where all other means fail, and the case is evidently going from bad to worse, it may be better to perforate than to allow the patient to die undelivered ; but I should feel the less encouraged to adopt this practice from the facts, that convulsions may get well, and the labour not come on for several hours, and even days, after ; and again, that they may

minutes, by directing a stream of water from a small garden engine upon his head. As a remedy in apoplectiform convulsions it is second only to blood-letting.—ED.

proceed to a fatal termination, even though delivery has taken place.*

By some persons it has been supposed that convulsions *always* depended upon mere *irritability* of the nervous system; and, in pursuance of their theory, they have universally treated the disease with opiates. As a general theory or practice, this is decidedly wrong; but I have already hinted at a similar opinion with respect to blood-letting, and it appears to me that, although a great number of cases absolutely require the latter treatment, still that some would succeed better under the former. The two plans, also, may be used conjointly with great benefit. Opium is indicated when the patient is weak and debilitated, with a quick unsteady pulse, and is possessed of an irritable temperament, and when, if blood has been drawn, it is evidently not inflammatory. After bleeding has been premised properly and beneficially, and the disease begins to yield, an opiate will tranquilize the system, and produce great benefit. The medicine may be used in any convenient form. When the patient can be got to swallow it, I should prefer the Dover's powder, as likely to favour a useful determination to the skin. The black drop answers very well, as, from its small bulk, it can be laid upon the tongue. The tincture of opium may be conveniently given as an enema, should that mode of adminis-

* I lately ruptured the membranes in a case of convulsions at the sixth month of pregnancy, after all other means had failed. Labour was completed in four hours after, but the woman did not recover.

tration be thought advisable. Should the violence of the disease abate, which may be known by an increase taking place in the length of the interval, and a decrease in that of the fit, we may of course diminish the energy of our treatment; still, however, moderately continuing to act upon the same principle as at first, and adding, if necessary, the application of blisters to the back of the neck or head. During recovery, the use of the catheter will usually be required.

Convalescence is generally slow, and it is often a long time before the functions of the brain return to their healthy state, the disease sometimes even passing into mania. Very frequently the woman is quite insensible of all that has occurred during her illness, and I have known the want of recollection to be extended to a period of some days before the attack, when there *appeared* to be no morbid condition in existence.

* * It is difficult to strike any average with respect to the relative frequency of convulsions. In the Wellesley Institution, during 1832, there was not a single case; while, in 1833, there were three—one before, one during, and one after delivery: the two latter recovered, the first was fatal.

Sudden death after delivery may be here briefly alluded to. It happens occasionally in the most unaccountable manner. A woman, for example, will go through her labour up to its perfect completion without any remarkable occurrence, and

shortly afterwards, upon moving abruptly, raising her head to take a drink, or during the disturbance necessary to admit of her evacuating her bowels, she will be seized with sudden faintness, and immediately expire. More rarely the same event occurs some days after parturition.

The pathology of this occurrence is little known: it appears to be in some way connected with a sudden removal of pressure from the contents of the abdomen, and is often called "a shock upon the nervous system;" a form of words which, I apprehend, is to be merely considered as conveying the negative information, that we cannot discover any organic lesion to which it may fairly be attributed. I once saw a woman die of apoplexy within twelve hours after a natural and good labour: she fell asleep a few minutes after delivery, and never awoke. On examination, several ounces of coagulated blood were found in the ventricles, and a large quantity of serum at the base of the brain.

Treatment in the former cases is almost unnecessary to be spoken of, as we seldom have time to employ any; if we meet an instance of dangerous syncope, we must exhibit stimulants, ammonia, ether, and, above all, burnt brandy or mulled wine. Should the patient rally a little, light strengthening nourishment should be given in small quantities, and all motion or active purgation avoided for several days.

The knowledge that such accidents now and then happen, should make us doubly attentive about several particulars in the treatment of lying-in women:

for instance, with respect to the proper application of the binder, with a view (in reference to this subject) of supporting the abdominal viscera ; also as to the observance of perfect rest and quietude, in a horizontal posture. The necessity for these attentions cannot be too rigidly enforced upon the mind of the young practitioner.

CHAPTER XVI.

ANOMALOUS LABOURS.—THIRD ORDER, WITH PLURALITY OF CHILDREN.

THE proportion in which this variety of labour occurs, appears to vary very much in different places. For instance, in the Hospice de la Maternité of Paris, twins are stated by Mad. Boivin, to average about 1 in 132, and triplets 2 in 20,357; while in the Dublin Lying-in Hospital, twins were found to occur as about 1 to 60, and triplets and quadruplets as 1 to 4,300.*

Nothing can be certainly known as to the existence of a second or third child in the uterus, until the first is born, excepting in some few instances, where different parts of two children have been recognized, at the same time, in the vagina. It follows from this that the labour of the first should be conducted, in all respects, as it would under ordinary circumstances, interfering or not interfering, just as may be necessary, in accordance with the rules for managing the various kinds of single labour, already laid down. When the first child is born, we at once know that there is another, when, in placing our left hand upon the abdomen, as has

* In the Wellesley Institution the proportion of twins has been about one in sixty-four.

been already directed, we find that the uterus has very little diminished in size. An examination will then enable us to feel the membranes of the second child, and its presentation. Very commonly the uterus resumes its efforts in a few minutes, and, in consequence of the passages being well dilated, the second labour will go on very speedily, if there be nothing in the presentation to prevent it. Occasionally, however, there may be a delay of hours or even days between the two births, unless the latter be artificially hastened. It is not easy to lay down a rule as to when we should interfere, but there is no necessity for much haste unless some untoward circumstance arise.

After the first birth has been concluded, we may put on a binder, with moderate tightness, and when we have waited as long as (according to our judgment) is sufficient to allow the womb to recover from its fatigues,* it will be advisable to rupture the second membranes. After this step, should pains not return, a dose of *ergot* may be given, and we should not resort to the introduction of the hand in a natural case, until we ascertain that these means are ineffectual. Should the second child present transversely, it is better to introduce the hand, and turn at once; and the same advice holds good in case of any circumstance arising that might endanger the mother, as convulsions, hemorrhage, syncope, &c. Occasionally, the second child requires

* This period must vary, according to the circumstances of the first labour, strength, and spirit of the patient, &c.

to be delivered with the forceps, in consequence of those symptoms presenting themselves, which, in an ordinary case, would lead us to the use of that instrument. When the first labour has been tedious and bad, or has required assistance, it will generally be prudent to expedite the second. In short, the rules to guide us in giving assistance in twin cases differ very little from those that ordinarily apply in single labour.

No attempt should ever be made to bring away the placenta, until after both children have been delivered : as there is often but one for the two fœtuses, and even if there were two perfectly separate, removing the first, while a child remained in utero, would be leaving a bleeding surface with an uncontracted womb. The management of the afterbirths, subsequently, is to be conducted on the same principles as in single labour. When we have occasion to remove them, both should be taken away together, for the reason just now stated.

It is a general rule to keep the mother, as long as possible, ignorant of the existence of a second child, in order to prevent her from being dispirited, which might interfere with the further action of the uterus. All the rules appropriate to twin cases, apply equally when there are three or more children in the womb. The more numerous the children, the more easy may parturition be expected to be, in consequence of their diminished size.

CHAPTER XVII.

ANOMALOUS LABOUR.—FOURTH ORDER.—PRESENTATION OF FUNIS.

THIS accident should rather be called prolapsus of the funis, as it merely slips down past the presentation, whatever that may be. The peculiar difficulties of the case refer entirely to the child, whose life is placed in extreme peril, from the probability of such pressure being exerted upon the cord, as will stop circulation through it long before respiration can commence. There is no danger to the mother, and consequently no ground for interference, if from the want of pulsation in the funis, we ascertain that the child is already dead, when we discover the nature of the case. Should it be otherwise, we must endeavour to obviate the injurious effects of pressure, which, however, is not easy to be accomplished.

The most feasible plan is to endeavour to pass up the cord above the presentation, and keep it there during the pains, until the latter fills the pelvis, and prevents it from again prolapsing. Some have recommended to hook it upon a limb of the child, if possible: others to enclose it in a bag, or pass a sponge after it, to keep it up. Any of these means, that are likely to do no harm to the mother, should be tried: but I cannot say the same with respect to

some instruments, that have been contrived for returning the parts. The chance of our saving the child by them is doubtful in the extreme ; and, upon so slight a chance, no prudent man will run the risk of injuring the uterus, which must be more or less hazarded by the use of those machines. Some gentlemen have spoken of delivering by turning or the forceps in funis presentations, but, I should hope, not seriously intending their suggestions to be adopted. It must be obvious to the most inexperienced, that the danger of pressure, in either of these operations, would be much greater than if the simple action of the uterus was trusted to.

* * * The proportion of funis presentations occurring in the Wellesley Institution, during the years 1832 and 1833, was 2 in 839.

CHAPTER XVIII.

ANOMALOUS LABOUR.—FIETH ORDER.—RUPTURE OF
UTERUS OR VAGINA.

THIS is probably the most fatal complication of labour that can occur. It happens generally to individuals who have had a number of children, and in whom, consequently, the walls of the womb have been thinned and weakened by repeated distension. It is likely to occur when the p  lvis is deformed, and, especially, when there is any sharp bony projection (*e. g.* a deformed sacral promontory), by pressure against which the uterus may be injured. The organ may also rupture itself upon the projecting limbs of the child, in a preternatural presentation, or it may be torn by the hand of the operator in turning.

The usual time for this accident to occur is in the course of a tedious labour, but it has happened when there was no unusual difficulty, and even, in some instances, long before the termination of pregnancy, so that it is very probable that, in most cases of rupture, there exists some previous disease of the uterus, which renders it particularly liable to laceration.

The improper and violent use of the forceps has, I believe, much oftener than is supposed, produced laceration of the vagina.

When the accident happens during childbirth, the symptoms are generally very remarkable. A severe labour pain will, probably, suddenly cease, and the patient, at the same time, will be sensible of something giving way internally. The presentation, unless it be firmly locked in the pelvis, will then immediately be found to recede, often out of reach of the finger; at the same time the limbs may, perhaps, be felt through the parietes of the abdomen, and there will be some hemorrhage from the vagina. Great languor and prostration of strength soon follow, indicated by quick, weak, unsteady pulse, laboured respiration, and cold sweats. At the moment of the accident, the stomach will sometimes reject its contents, and shortly afterwards there will be vomiting of the brownish matter, so well known from its resemblance to coffee grounds: the pains entirely cease from the time of the rupture. The situation of the rupture is usually either transversely at the place where the cervix impinges upon the promontory of the sacrum, or where the cervix and vagina join, in which case both vagina and uterus are often involved in the rent; it may also happen at any part of the fundus.*

* Laceration of the uterus is not always accompanied by the symptoms enumerated in the text. It has occurred in New York twice within the past year, without any symptom other than extreme, and rapidly increasing prostration. In one of these cases, though the rupture must have taken place while the practitioner was in the room, the nature of the case, and the cause of death were not suspected, till revealed by post mortem examination.—*Vide New York Med. Gaz.*—ED.

The treatment generally adopted in these cases is to deliver the woman as soon as possible. If the head presents, and has not receded, this may be done with the forceps or perforator, whichever, from circumstances, may be considered most advisable. Should the child have partially escaped, through the rent, into the abdomen, the hand must be introduced, turning performed, and delivery accomplished by the feet. When the child has passed entirely out of the uterus, some practitioners recommend that delivery should not be attempted, but the further disposal of the foetus entrusted to nature, there being a remote probability of its being discharged, by an ulcerative process, through the abdominal walls. The choice left to us is a melancholy one, and I am not aware that much can be said in favour of either one plan or the other.*

The subsequent treatment must be entirely guided by circumstances, and by the general medical and surgical knowledge of the practitioner. What is to be dreaded, is, first, the sinking and death of the patient, in a few hours, from the violence of the shock; and subsequently, if she rallies from this,

* From post mortem examination of two cases of ruptured uterus, I am induced to believe, that where the child has passed out of the uterus into the peritoneal cavity, the attempt to deliver by dragging it back, would be extremely difficult, and attended with great danger. In both the cases alluded to, the uterus was found after death contracted to the size of a child's head, and the rent so diminished in size, that a very considerable extension of the laceration would have been the inevitable consequence of any attempt to drag the foetus through the opening.—ED.

peritoneal inflammation. Until some degree of reaction sets in, we shall probably find it necessary to give stimulants ; afterwards, we must treat the case according to the symptoms. The peritonitis is generally of a low kind, accompanied with typhoid symptoms, and will seldom bear the free use of the lancet. Leeches to the abdomen, and opium in large doses, or calomel and opium, have, perhaps, more reasonable indications in their favour than any other plans. I would feel particularly disposed to avoid the use of any purgative measures, excepting mild enemata.

The chances of the patient's escaping are, of course, very slight ; but still instances of recovery have occurred, and we should not altogether despair as long as there is a spark of hope.

Laceration of an over-distended bladder is said to have happened during labour, in consequence of the attendant neglecting to relieve retention of urine ; more usually, the injury done to the bladder merely excites inflammation, which too often terminates in sloughing and the production of a fistula. The first accident must be a very hopeless one, the patient having scarcely a chance of escaping the low peritonitis that must be expected to ensue.

Ruptures of large blood-vessels in the abdomen, and lacerations of viscera, as the liver, &c., have been recorded. The symptoms will be obscure, and the nature of the case doubtful until after the death of the patient, and it is obvious that there will never be either opportunity or use for any medical treatment.

CHAPTER XIX.

MANAGEMENT OF PUERPERAL WOMEN.

IN order to comprehend this subject, we must have clear ideas with respect to the state in which a woman is situated after labour. In the first place, her muscular power has been exerted in a violent and unusual manner probably for several hours, and as a natural consequence considerable fatigue produced; secondly, her circulation has been a good deal excited, and a remarkable change has taken place in the relations of the abdominal viscera to each other and to their containing walls; and, thirdly, the patient has been suffering more or less mental anxiety and distress.

All these circumstances manifestly require rest, both moral and physical; and accordingly we must enjoin perfect quietude, and allow the woman to sleep, if she be inclined to do so. The erect posture, and every thing stimulating, either in the way of drink or food, must be positively forbidden, as from the state of the circulation and of the abdomen, as well as of the nervous system, there is a peculiar liability to inflammatory or irritative action. Should the woman's stomach be empty, it will be well to give her some cool gruel or whey, with a little dry toast: this will employ her digestive organs, and prevent the very great annoyance

which is sometimes experienced from flatulency. The binder will probably require a little tightening after the placenta has been expelled : the doubled sheet may then be drawn quietly from under the woman's hips, so as to make her more comfortable, and a dry folded napkin applied to the vulva. These precautions having been attended to, we may take our leave, giving strict directions that she shall not be moved at all for two or three hours, but that if she feel well at the end of that period, the left side of the bed may be arranged comfortably, and she may be shifted quietly upon it, so as to admit of the wet sheets, &c. being removed from the place where she was at first lying.

Within twelve hours we should always visit our patient, and we have then to ascertain the state of her tongue and pulse ;* whether there be any pain or tenderness in the abdomen ; whether she has had sleep, and passed urine ; and whether the after pains have been severe, or the discharge copious. Should matters be going on well, we have nothing to do until twenty-four or thirty hours after delivery ; when, if the bowels have not been opened, a mild aperient of castor oil or rhubarb should be given, or an enema administered.† A light, non-

* The pulse should have fallen by this time from the elevation caused by the labour to nearly its natural standard. I have, however, found it to remain quick, in irritable women, for some days, without any bad results. These cases should be closely watched.

† When women have piles, castor oil often produces much irritation, and a preferable substitute will be a couple of drachms of senna electuary, or some of the infusion of senna with carbo-

stimulant, but sufficiently nutritious, diet should be prescribed ; consisting, at first, of gruel, and tea or cocoa with biscuits or toast. On the third or fourth day, if nothing forbid, a little chicken may be allowed, and half a glass of white wine diluted with water ;* after which, a gradual cautious return may be made to the ordinary diet.

The patient should not be allowed to rise from her bed sooner than the third or fourth day, and then only for a short time while it is being made. This restriction serves both to keep the circulation tranquil and to prevent prolapsus of the uterus, which is likely to happen, unless the parts are allowed time to regain their tone after the relaxation which they have suffered during parturition. In the third week in summer, and probably the fourth in winter, a drive or walk in the open air may be permitted. All these limitations of time must of course be understood *cum grano salis*, and acted upon with reference to general principles. For instance, I have known it to be advisable to give solid food from the very first to patients with whose stomachs slops peculiarly disagreed. But of these matters,

nate of magnesia, already mentioned. In ordinary cases, I would set my face entirely against the drastic purgatives sometimes employed. Nothing could be better devised for exciting intestinal irritation and fever than this unhappy practice.

* The wine here allowed is unnecessary. The proportion of American women who use wine habitually is *happily* so small that the adoption of any general rule, to give wine during the puerperal state, would be productive of the worst consequences.

—ED.

every practitioner must judge for himself; and in an acquaintance with such peculiarities and exceptions, derived from observation, consists that practical experience which teaches, but cannot be taught.

There are two secretions which play important parts in the woman's constitution after delivery—these are the lochia and the milk. The *lochia* consists at first merely of the blood which is squeezed out of the enlarged vessels by the contractions of the uterus. It continues sanguineous for some days, then changes to a greenish serum, finally becomes paler, and decreases gradually, until in three or four weeks (more or less, in different women) it altogether ceases. Like every other secretion, it is suppressed or diminished by any accession of fever or inflammation, and thus becomes a valuable diagnostic symptom of either of these states.

The existence of the lochia requires strict attention to cleanliness on the part of a puerperal woman and her attendants, as if the discharge be allowed to accumulate, it soon becomes putrid and irritating. The vulva should be sponged every day with lukewarm water.

[Dr. Dewees advises to interfere with the lochial flow if it continue free longer than ten days. Interference with this secretion is proper when it is excessive and obviously producing bad effects, on the constitution, whether this happens on the tenth or twentieth day. Profuse lochial discharge is very generally dependent on debility and relaxation, and here as in chronic leucorrhœa, to which it is near

akin, the debility and the profuse discharge act and react as cause and effect upon each other. To such cases tonics and the mineral acids are appropriate. I know of no better form than, R. Rad, Columbo, Cont. zii., Cort Aurant, ℥j. aqua bull., a pint. A wine glass full, to which elix. vitrol, gtt., x, is to be added is a dose, to be taken once or twice a day.*]

Milk commences to be secreted during the last days of gestation, and often much earlier. During the act of parturition, and for a few hours afterwards, a degree of fever exists, which often suspends the secretion for the time; but the popular notion, that it does not come until the third day, is quite unfounded, and leads to injurious practical results. After the woman has rested and slept a little, (say in ten or twelve hours,) the child may be applied to her breasts, generally with much advantage to herself and it. The constant removal of the milk as fast as it is secreted effectually prevents accumulation in the gland, and the distension and fever consequent upon it, which otherwise would happen about the third day, and the occurrence of which has given rise to the popular prejudice alluded to. If it be manifest, however, that there is no secretion in the breast, it is not advisable to keep the child applied, as its determined efforts to extract

* Introducing this little prescription gives me an opportunity to pay a tribute of respect, to the individual from whom I first had it—that most able practitioner, and honourable man, Wright Post, M. D., late Professor of Anatomy, in the College of Physicians and Surgeons.

something may have the effect of excoriating the nipples, and creating much after suffering.

The milk, like the lochia, is suppressed by fever or inflammation; and thus, by its quantity, it often affords useful indications. When a woman does not intend to nurse, her diet should consist less of fluids than under other circumstances; aperients should also be exhibited more freely; and if the breasts become hard and painful, they must be rubbed diligently with a little sweet oil, or perhaps it may be necessary to have the milk drawn from them by a breast pump.

After-pains.—These are rare after first labours, but very commonly occur after subsequent ones: they are occasioned generally by the efforts of the uterus to expel coagula of blood, which, from time to time collect in its cavity. They also seem to depend sometimes upon constipation. In some instances, they continue from the time of delivery for several hours; in others, they do not commence until twelve, twenty-four, or thirty hours have elapsed.

We may distinguish these pains from peritoneal inflammation, by their remissions, by the abdomen being free from remarkable tenderness, by the secretions of milk and lochia being undisturbed, and by the pulse being quiet and indicating no fever, and by their being excited by attempts to nurse.

After-pains do not require much treatment; a little friction over the uterus, and a mild aperient, will often relieve them. When they are severe and

prevent the woman from sleeping, it may be necessary to give an anodyne;* but, as the contractions are a natural occurrence, and intended to remove coagula, which, if retained, might be injurious, it is as well, if we can so manage, to avoid a stoppage of the uterine action by narcotics.

Several accidents may happen during labour, which, after its completion, require to be understood and attended to by the accoucheur, although the treatment of many of them falls strictly within the province of surgery. Of these, we shall take a brief notice.

Lacerations of the Perineum have been already alluded to: they may occur merely as rents of the posterior commissure of the vulva, or they may extend into the rectum; or, lastly, the head of the child may be driven through the perineum, leaving the posterior commissure entire, and constituting what has been termed the circular perforation. In

* Extracti opii aquosi gr. jss. in pilula; vel tincturæ opii, gtt. xxx. in haustu.

[I often combine an opiate and a purgative, Castor oil ʒss. with laudanum, 3ss. It produces the very best effects; given "*hora somni*," it secures a good night's sleep and a free evacuation of the alimentary canal, with entire dissipation of the after-pains in the morning. Ergot (5 grains or gtt. x. of the tincture) given every hour, will often promote complete contraction of the uterus, insure the evacuation of any clots, and relieve the pains. Dewees was very partial to the following mixture:—R. Pulv. Gum. Camphor, ʒii. Pulv. Gum Arabic, ʒiii.—sacharum alb, ʒi, aqua font ʒvi. m. Dose, a table-spoonful every hour or two.—ED.]

the first case, little treatment is required : cleanliness should be strictly attended to, but there is no necessity for any dressing, as the sides of the wound are kept in apposition by the mere approximation of the thighs. When the injury is more severe, it becomes a case for surgical treatment, and therefore is beyond our present limits.

Inflammation of the Vagina sometimes follows a tedious labour, or even a natural one, when the woman sits up too soon or too long at a time after delivery. The symptoms are heat and soreness of the part, with a sense of bearing down, and occasionally painful and frequent micturition. It may end in suppuration, and even adhesion of the vagina ; or if the parts have, in the first instance, suffered much, there may result sloughing, and perhaps a fistulous communication with the bladder or rectum.

The inflammation must be treated in the commencement upon ordinary principles. The woman must be kept at rest, in the horizontal posture, fomentations applied, and the other means suitable to the case in a surgical point of view diligently employed. Our attentions should be redoubled, if we see any reason to dread sloughing, which we may be led to expect when the woman is of a broken-down, bad constitution. In such a case, we should be particularly attentive to the drawing off the urine, which should never be allowed to accumulate in the bladder.

[If the inflammation has been severe and especially if sloughing has taken place, attention should

be directed to the vagina, till the process of cicatrization is completed, to prevent contraction of the canal or adhesion, and a perfect occlusion. For this purpose a bougie (a full-sized mould candle will do very well,) should be passed twice in every twenty-four hours, in the early part of the case, and subsequently a sponge tent worn. In a case reported by Professor Meigs, from neglect of these precautions, universal adhesion of the vaginal wall took place, and when the patient came under Dr. Meigs' care the canal was perfectly obliterated. She was relieved by an operation performed by Dr. Randolph.]

Ecchymosis of the Labia.—This sometimes occurs during a violent labour, in consequence of a bursting of some vessel, and consequent pouring out of blood into the loose cellular texture of which these parts are composed. A labium will sometimes become suddenly almost as large as the child's head, and may even impede delivery. In such a case it is recommended, immediately after the occurrence, to puncture the part, and allow the blood to escape while it is yet fluid. This should never be done, however, after coagulation has taken place, as admission of the air then would cause the blood to become putrid, and excite a mischievous and unhealthy suppuration. If we leave the part untouched, absorption will in time be effected, and no injurious consequence remain.*

* Authors are not agreed as to the question of opening these

Retention of Urine sometimes supervenes upon a perfectly natural labour in an irritable woman. The urine must be drawn off twice a day with a catheter, until the bladder regains its tone, which it probably will in seven or eight days. Should retention continue after the dangers of the puerperal state have been passed, it may be necessary to give tonics (especially preparations of iron), and to apply a blister to the sacrum. These means are usually sufficient.

Incontinence of Urine is also an occasional consequence of labour; but if there be no organic injury, it is not likely to be troublesome. The same *medical* treatment will apply to it as to retention.

tumours; the better opinion seems to me to be, that if the blood is fluid it should always be evacuated, there is no fear of any hemorrhage which plugging the vagina would not control. If, however, the blood be already coagulated, the propriety of opening or not, depends mainly on the quantity effused. If there is but little, the present suffering is not great, and we may let it alone, feeling confident that the absorbents will remove it. If, however, the quantity be large, I think an opening should be made; and this for two reasons: 1st. the present suffering is intense, and may produce the worst effects; cases are on record where delirium and death have resulted from the irritation and pain of one of these ecchymosis, 2d. the absorbents cannot generally be expected to take up a large quantity of effused blood from the labia, the skin will ulcerate and an imperfect opening be made, when the patient, after enduring the most agonizing pain will be found in a worse state than though an opening had been made in the first instance. The opening should be free, and extending the whole length of the thrombus, so as to evacuate the clots as speedily as possible. The wound may be dressed with a poultice, made with weak chlorine solution.—ED.

Piles are sometimes productive of very great pain and inconvenience to puerperal women, the pressure upon them during labour causing inflammation and great tumefaction. Warm fomentations will often give sufficient relief, but occasionally it is necessary to apply leeches. Eight or ten may be put on, and when they fall off, may be succeeded by a warm poultice of chamomile flowers, which will encourage the bleeding, and give much relief. I have already alluded to the kind of aperients best suited for piles, and mentioned that castor oil, contrary to what is commonly supposed, is very likely to irritate the extremity of the rectum.*

Obstacles to nursing.—One of the most formidable of these arises from a deficiency of nipple. Owing to the tight dresses worn by females, this part is sometimes so firmly compressed into the substance of the breast, as to offer nothing for the child's lips to lay hold of. In such a case it must be drawn out by the breast pump, or by a strong child, and the infant instantly applied.

Sore Nipples.—The nipples of some women are peculiarly tender, and liable to excoriation. When we know that this is the case before labour, we should harden them by exposure to the air for some

* When the inflammation has subsided, I have seen much benefit derived from the following liniment, recommended by Mr. Colles: a drachm of laudanum may be added to it with advantage.

R Olei Olivaram, ʒij. Liqueoris Subacet. Plumbi, ʒj. M. Fiat linimentum.

time every morning, and by the use of a lotion of spirits and water. The only effectual means of relief, when excoriations do occur, is the use of the nipple shield, whereby the exciting cause (pressure of the child's mouth) is removed.* In addition to this, we may apply slightly stimulating lotions, as sulphate of zinc solution,† or spirits and water, or, what answers very well, the black wash. Syphilitic sores, or aphthæ, may be communicated from the child's mouth to the nipples, and, of course, from their specific nature, demand peculiar attention.

[Sometimes we derive great advantage from pencilling over the nipple with lunar caustic. This remedy, however, should be tried cautiously, as in some cases it increases the inflammation, nor have I been able to distinguish beforehand those in which it was beneficial from those in which it did harm.]

* The best form of this useful instrument is that made of gum elastic.

† R Sulphatis Zinci gr. viij. Aqua Rosarum ℥iv. M. Fiat lotio.

The following, I believe, is a formula of Sir A. Cooper, and is very useful:—

R Subborat. Sodæ ℥ij. Cretæ Precipitatae ℥j. Sp. Rectificati, Aquæ Rosarum, aa ℥ iij. M. Fiat lotio.

CHAPTER XX.

PUERPERAL FEVER.

UNDER this name authors have described several modifications of disease, and even some totally distinct affections, thereby causing so much confusion, that many gentlemen have been induced to contrive, in its stead, a variety of terms, by which they hoped not only to designate a certain malady, but to convey scientific allusions as to its nature. In the complete attainment of these objects, I think they have all failed, and I shall therefore continue to employ the old term* as involving no peculiar theory, and being now perfectly well understood to apply to a certain range of very fatal morbid conditions which occasionally follow parturition.

Diseases popularly termed Puerperal Fevers, and coming strictly within the meaning which we wish to apply to these words, may occur either sporadi-

* It has always appeared to me, that the more hieroglyphical we can make our terms, the better, in so uncertain a science as medicine. When a name contains a theory, it must lead us astray as soon as the latter is changed; and how long does any theory hold its ground in pathology? If authors sought to obtain and teach correct *ideas* of the *nature* of diseases under their old names, in place of inventing new ones, we should have less of that fighting about words, which is unquestionably the opprobrium of medicine.

cally, or as very destructive and general epidemics; and under these different forms have been repeatedly described with variously modified symptoms, and as often treated by excellent practitioners upon diametrically opposite principles. So various, indeed, have been the accounts of writers, that no symptoms can be fixed upon as having been commonly described by all, excepting fever, quick pulse, and tenderness (often very indistinct) in the abdomen. Amid these bewildering circumstances we must seek our guide, both for theory and practice, in an attentive consideration of the pathology of the disease, upon which subject the profession are much indebted to the researches of Dr. S. Cusack and Dr. Lee. By both these gentlemen, the affection is considered as an inflammation occurring within the abdomen; and by the latter, it is supposed, that the various forms which it assumes, "whether inflammatory, congestive, or typhoid, in a great measure depend on whether the serous, muscular, or venous tissue of the organ has become affected." This proposition is probably, to a certain extent, correct; but as Dr. L.'s divisions are rather suited to the dissecting room than the sick chamber, we shall take Dr. Cusack's more practical classification into three species:—1. the Inflammatory; 2. the Typhoid; and, 3. the Mixed.

1. The first or inflammatory species differs but little from ordinary peritonitis. It occurs in patients of good constitution, and when epidemic, prevails simultaneously with diseases of a decidedly

sthenic character. Its causes are exposure to cold, irregularities in diet, and perhaps contagion.

The symptoms are, first, a rigor seizing the patient, usually about the second, third, or fourth day after labour; if the abdomen be carefully examined, some tenderness will immediately be found over the uterus, which quickly increases to severe pain, and extends over the whole abdomen. The pain may be aggravated in paroxysms, but is never absent, and the tenderness becomes in a short time so exquisite, that the patient cannot bear even the weight of the bed-clothes. She lies upon her back with her knees drawn up, so as to relax, as much as possible, the abdominal walls; and, in order to avoid the pressure of the diaphragm, endeavours to respire by means of the intercostal muscles, thus giving to the breathing a very laboured character. The rigors are succeeded by nausea, heat of skin, thirst, and often intense pain in the forehead. The countenance is expressive of great suffering. The pulse is quick, sometimes full and throbbing, at others, hard and wiry, but always *incompressible*. The tongue is generally white and creamy, but varies in its appearance. The bowels are usually constipated, the urine scanty, and the milk and lochia suppressed. If the disease be allowed to run on, the belly becomes tympanitic, diarrhœa and vomiting of dark matter ensues, the pulse becomes feeble, the breathing hurried, sometimes with severe pain in the chest, and death occurs about the fourth day, often much sooner.

The disease is liable to be confounded with se-

vere after pains, intestinal irritation, and hysteric tenderness of the uterus and abdomen. From the first, it is to be distinguished by its want of remissions, by the tenderness on pressure, and by the severity of the fever. Intestinal irritation is to be known chiefly by the previous marks of derangement of the chylopoietic viscera, and by the absence of extreme tenderness on pressure. In hysteric tenderness, it is often very difficult to discriminate, the patient appearing to suffer exquisite torture, and screaming even before our hand reaches the surface of her body. In these cases, however, if we are able to divert away the woman's attention, and still keeping our hand upon the abdomen, to gradually increase the pressure, we shall find that she can easily bear what she at first shrunk from with terror.

The morbid appearances in this species are precisely similar to those observable in peritonitis. The peritoneum, especially near the uterus, is thickened, vascular, and coated with lymph; the viscera are frequently agglutinated together, and there is an effusion into the cavity (often in immense quantity) of whey-coloured or sero-purulent fluid, mixed with flakes or masses of lymph. The omentum is sometimes inflamed, and there is a large quantity of air both in the intestines and abdominal cavity. In the thoracic cavity there may be serous effusion into the bronchial cellular tissue and pleura, or a coating of lymph upon the latter.

2. The typhoid form of the disease occurs in patients of broken-down constitutions and depressed

minds, living in unhealthy situations, and who probably have suffered hemorrhage or manual interference with the interior of the uterus. When epidemic, it appears to prevail in connection with diseases of an asthenic character, as typhus fever, erysipelas, and diffuse inflammation; and, like these, it often occasions sad ravages in hospitals.

The symptoms are by no means so prominent as in the first species: there is often little or no pain, and scarcely any tenderness, except at the commencement, and then perhaps only when we press firmly upon the uterus. The disease usually commences with a rigor, but even this is sometimes indistinct. The pulse is quick and feeble, and differs from its character in the first species by being remarkably *compressible*. There is extreme weakness and exhaustion, with want of rest; of all which the countenance is particularly expressive. Indeed, so remarkable is the anxiety apparent in the patient's face from the very outset, that one can often recognize the disease from the appearance of it alone. The skin is also sallow and dirty-looking, and seldom hot; towards the close there may be petechiæ. The respiration is hurried—the lochia and milk suppressed, or the former diminished and fœtid. In the latter stages there is often a feculent diarrhœa. The tongue is sometimes natural and remarkably clean, or it may be of a bluish creamy whiteness, or even blackish.

The patient quickly becomes weaker and weaker, and the disease may proceed to a fatal termination in a few hours, or it may hang on for twelve or

fourteen days. In some instances, I have had a firm conviction that this form of fever had made its commencement several days before parturition, and that in many cases where it was supposed to be the consequence, it was, in fact, the cause of difficult labour.

The morbid appearances in this species differ considerably from those observed in the first, but still they are obviously the result of a kind of inflammation. The effusion into the peritoneal cavity is by no means so great as in the former affliction, nor are there any adhesions or extravasations of lymph. The fluid effused is sometimes a brownish, dirty-looking serum; at others, of an oily, semi-purulent character. In the subserous and pelvic cellular tissue, and between the broad ligaments, a reddish serum or a gelatinous fluid is deposited in considerable quantity. The same deposits often exist in the uterine substance, which may be softened and altered in texture, so as to present a gangrenous appearance, and may contain depositions of pus. The internal coat of the womb is also sometimes softened in patches, and of a dark or ash-grey colour. Similar changes may occasionally be observed in the coats of the intestines. The ovaries are frequently enlarged and changed into cysts of pus, and may undergo a process of softening to such a degree, as not to admit of being handled without being destroyed. The absorbents and veins of the uterus, in some cases, are found filled with pus; and abscesses and disorganisation may occur simultaneously in distant organs, as the lungs,

spleen, liver, joints, eyes, brain, &c. ; the disease in these melancholy examples strikingly resembling that form of diffuse inflammation which follows dissection wounds, or operations performed upon unhealthy subjects during the prevalence of erysipelas. Dr. Lee has divided the morbid appearances just described into three sections, considering that the disease may distinctly affect the appendages of the uterus, its muscular tissue, or its veins and absorbents. He has not, however, been able to point out any means of diagnosis between these, nor any difference in the effects of remedies, or in the ordinary fatal results. His division, in fact, is founded upon morbid anatomy, not upon pathology, and therefore is not of use in practice.

3. There is decidedly a mixed species of disease, what, in fact, we might expect to meet with in an individual of strong constitution, at a time when the "*constitutio anni*" was of an asthenic type.

The symptoms are a mixture of those of the other two : considerable pain and tenderness often existing, with a pulse not possessing the wiry hardness or incompressibility of the inflammatory species ; much debility and little relief following the employment of the lancet ; and the blood neither presenting the highly inflammatory appearance of the first form, nor the broken-down, scarcely coagulating quality of the second.

The morbid appearances generally indicate inflammation of the peritoneum, but wanting the very adhesive character of the first species, and often presenting at the same time a degree of the subse-

rous infiltration and tendency to alteration in the uterine appendages which characterize the typhoid disease.

Some difference of opinion has existed as to the contagious or non-contagious nature of puerperal fever. Like every question of the kind, it is one extremely difficult to come to any conclusion about. But so many instances have been recorded of the disease following a particular nurse or accoucher, that it would be now highly culpable in any practitioner not to adopt the most strict precautions against the risk of his carrying infection from one patient to another. After seeing a case of this fever, the clothes should always be changed, the most careful ablutions performed, and no accoucher should personally interfere in the opening of the bodies of victims to the complaint. Should a run of fever continue to affect the patients of any individual, notwithstanding attention to these matters, it becomes his bounden duty to abstain temporarily from practice, and, if possible, to remove for a time from his ordinary residence.

The treatment of puerperal fever, of course, varies very much according to the species.

In the inflammatory form, antiphlogistic treatment is decidedly indicated in the commencement, and the lancet should be our sheet anchor. As much blood (probably from twelve to twenty-four ounces) must be taken from the arm as will produce a decided effect upon the circulation. To do this most efficiently, a large orifice should be made in a vein, while the patient is in a recumbent posture, its

effects upon the pulse and countenance being carefully watched. Dr. Cusack very justly remarks, that placing the woman in the erect posture when we are going to bleed her will generally produce syncope, quite independently of the abstraction of blood, and may prevent the useful employment of this remedy. We must be guided, with respect to a repetition of venesection, by the effect of the first, and by the appearance of the blood. The latter, and the compressibility or non-compressibility of the pulse, afford very valuable indications. When there is any doubt about a second blood-letting, we may, as an intermediate measure, apply leeches to the abdomen. Venesection, when it is proper, should always be adopted as early as possible in the complaint, as the lapse of a very brief space of time may render its employment worse than useless. As long, however, as the pulse retained its *incompressibility*, I should not be prevented from using the lancet, even by the existence of considerable debility; the former symptom, I think, giving the truest indication upon this point.

After bleeding, whether we think it advisable to apply leeches or not, we shall find great advantage from a fomentation of the whole abdomen with spirits of turpentine,* or the application of a bag of scalded bran, or chamomile flowers as hot as

* To apply this, a piece of flannel may be wrung out of hot water, and an ounce or two of the turpentine sprinkled upon it. It causes great pain, of which the patient should be apprised, and desired to remove it as soon as the smarting becomes very severe.

they can be borne. Either of these latter are infinitely preferable to poultices, from their lightness and cleanliness. The turpentine has often a peculiarly good effect, removing distressing flatulency, and sometimes producing evacuations from the bowels. If constipation exists, a smart purgative, as castor oil and spirits of turpentine (half an ounce of each), or a bolus of jalap and calomel (ten grains of the former, and five of the latter), may be administered, and followed by an enema. Should the bolus be given, and not act quickly, it must be assisted by a purgative mixture (inf. sennæ, &c.) If the stomach be irritable, it may be more advisable to give the purgative in the form of pills.* When the constipation has been relieved, the intestinal canal should not be further irritated by cathartics. After bleeding, and freeing the bowels, the next remedies, upon which our dependence should be placed, are decidedly calomel and opium. The former should be given in doses of two or three grains every second hour, until the system is influenced, combining one-sixth or one-fourth of a grain of opium, should the bowels be irritable. At night, ten grains of Dover's powder will often be found to produce sleep, and do much service. When the mouth becomes affected, the prognosis is almost always favourable, and we should continue the action by smaller doses of mercury.

* R Extract. Colocynth. comp. $\mathfrak{zss.}$, Calomelanos, gr. x., Olei Caryophill. $\mathfrak{gs.}$ iii. Fi. massa, et divide in pilulas decem, sumantur duæ 2da q.q. horâ ad effectum.

I have no great opinion of the use of blisters in abdominal inflammations, especially in the first stages, as they then very effectually deprive us of one of our best guides, by masking the pain and tenderness upon pressure. In the latter stages, however, they are often of service.

The regimen, in this species, must, of course, be rigidly antiphlogistic; and, should the disease subside, the strictest precautions must be adopted to prevent relapse, to which there is a considerable tendency.

In the second species, bleeding is always injurious, and often hastens a fatal termination.

The medicines upon which most reliance can be placed in this very intractable malady are mercury and opium; and, as a very great source of suffering exists in the patient's restlessness and want of sleep, the latter may be given in considerable doses; for example, a grain every three or four hours, in combination with from two to four grains of calomel, until the patient sleeps, or an effect is produced upon the system by the mercury. According to the observations of Drs. Graves and Stokes,* opium appears to exercise a beneficial influence in several low forms of inflammation, and there is a good deal of encouragement for its free use in this disease. If the bowels are constipated, or we have reason to suppose them to be loaded, a mild aperient must be given; but it should be of a warm and simply laxative kind, as the rhubarb draught already

* Vide Dublin Hosp. Reports, vol. v.

mentioned.* Spirits of turpentine has been recommended by some gentlemen, and it will sometimes be found of use by acting as an aperient, and, at the same time, stimulating and restoring a healthy tone to the mucous membrane.† We should be extremely cautious about giving any drastic purgative, lest it might increase the debility, and accelerate the approach of diarrhœa, which is often a very troublesome symptom. When the latter sets in, we must endeavour to check it by enemata of starch and laudanum. The application of turpentine, externally, will often be of service: and we may, also, in the progress of the complaint, employ blisters with more advantage than in the inflammatory species.

The dietetic and general management of the patient is of much importance. She should, if possible, be placed in an open airy room; wine must be given, diluted with water, or in arrow-root, so as cautiously to support the strength, taking care, at the same time, not to add to the gastric derangement. Cold chicken broth may be allowed as ordinary drink, and will be often found to agree remarkably well with the stomach.

Should a rally be made, we shall be obliged to assist the patient's recovery by light tonics, and,

* Vide p. 125.

† R. Sp. Terebinthinæ rect. ʒvj., Aquæ Cinnamomi ʒvj., Syrupi Zingiberis ʒj. M. Fiat haustus, 2da quâque horâ sumend.

perhaps, by sulphate of quinine. At all times we must be carefully on the watch for a relapse.

The third or mixed species of puerperal fever requires a modified and cautious treatment. Our principal reliance must be upon calomel and opium; but, although general blood-letting is seldom safe, we shall frequently find much advantage in the application of leeches (two or three dozen) to the hypogastrium, repeating them, according to the degree of pain and tenderness, and the manner in which the loss of blood is borne.

[In an epidemic which raged at Keil in 1834, 35, and 36, Michælis used ice both externally and internally, with excellent effect. The cases in which he gave it with success were marked by burning pain and heat in the bowels, thirst, painful eructations, and tenderness at the epigastrium. The brain was clear—no delirium. The ice was given by the mouth, in bits the size of the finger, every half hour or oftener, it was also applied over the abdomen in a large bullock's bladder, extending from the epigastrium to the pelvis, in a layer half an inch thick. This application was in some cases continued for three days, the bladder being changed as soon as the ice melted. It was very grateful to the patient, and Michælis thinks that it cured some cases where effusion had actually taken place, into the peritoneal cavity. The use of ice was not persisted in, unless it was grateful to the patient. The symptoms of amendment were a sudden and very great fall in the frequency of the pulse, a peaceful sleep, relief from the painful eructations, and diminished disten-

sion of the bowels. A profuse watery diarrhœa, occurring with these favourable changes, seemed to him to be critical. The authority of Michaelis would justify the use of ice, and in a case marked by burning pain and urgent thirst, if the ice was grateful to the patient, I should expect good effects from it. It ought to be tried at any rate.]

In the treatment of all these species, we are to recollect that the one frequently runs into the other, and that they must always be managed according to the symptoms, and not upon any preconceived notion respecting their type. To no malady, indeed, is the excellent advice of Sydenham more appropriate, "to find out," in the first place, the genius of epidemic diseases, which, though they may seem alike to the unwary, because in some sort they do agree, to outward appearance, yet, if seriously considered, are very different."

Emetics, antimonial preparations, and various other remedies of all kinds, have, as might have been expected in so fatal a disease, been recommended for the treatment of puerperal fever; but, my object being simply to give a plain statement of what I conceive to be useful in practice, I think it would be exceeding my limits to enter into the consideration of speculations of this kind, which are not supported by solid practical foundations.

[Within the last few years the attention of the profession has been specially directed by Marshall Hall, and others, to a form of puerperal disease dependent on intestinal irritation. This may readily be mistaken by the unwary for puerperal

fever, its true nature and appropriate treatment ought to be studied with care. The puerperal state, though not a state of disease, is one of great susceptibility to the action of morbid agents, and hence it often happens, that causes of irritation which the system is able to resist during pregnancy, will produce the most serious, and even fatal effects, if their action is allowed to continue during the puerperal state.

Now, one of the sources of irritation to which women are most frequently exposed, is the fœcal accumulations which are so apt to occur during pregnancy.

Again, susceptibility to irritation is always augmented by exhaustion, (within certain limits) particularly if it be from loss of blood. Now, taking these premises together, it is easy to see that intestinal accumulations, may excite in the susceptible system of the parturient female, a vast amount of irritation, and this will be most apt to happen when the strength is broken down, and the vital energies exhausted by a tedious labour, by uterine hemorrhage, or by some pre-existing state of disease; to distinguish this irritation from inflammation—this irritative fever from puerperal fever, is exceedingly difficult. In both we have a chill, followed by heat of skin, a rapid pulse, pain and tenderness in the abdomen, in both the tongue is white and loaded, and there is headach. Not only does this similarly exist in the irritatory symptoms, but the effect of one remedy, and that the one most likely to be tried, will, very probably, mislead us. Suppose

we are called to a woman on the third or fourth day after delivery, we find that she has had a chill, that the skin is now hot, the pulse 150 and tolerably firm, there is throbbing pain in the head, and tenderness on pressure over the abdomen, we diagnose puerperal fever, and resolve to bleed, say 20 ounces. The patient feels a little faint from the bleeding, she rallies, and the symptoms are surprisingly ameliorated, the pain in the head is gone, the abdomen is less tender, the skin covered with a free perspiration. The bleeding seems to have produced the best effects. But next day she will be worse, a second bleeding may be judged necessary to *extinguish* the disease; the symptoms again abate, but in a few hours they return with redoubled violence, and if another bleeding is tried, a few ounces will sink the patient into a collapse from which she never rallies.

Now, I will not say, as Hall does, that a majority of the fatal cases of puerperal disease are of this character, and fatal because thus treated, neither will I say that such cases never occur. *I know that they do.*

The following diagnostic marks will enable the attentive observer to avoid confounding these two cases. The attack of the irritative fever is oftener sudden, the pain, particularly the throbbing pain, in the head, occurs immediately after the chill, it is often more distressing than the abdominal tenderness, the pulse attains its maximum of rapidity sooner, and it is more apt to vary, as, indeed, do all the symptoms, from hour to hour. The patient ap-

pearing better and worse, two or three times during the day. If exhaustion is playing a part in the disease, the cerebral symptoms will be much aggravated by raising the head from the pillow.

In irritative fever, from fœcal accumulations, the tongue is more loaded, the abdomen universally soft, puffly, and full, the pain is scarce ever confined to one spot, which, in the beginning of puerperal fever, it almost always is. If these symptoms, or most of them, attend a case, intestinal irritation should be apprehended. Puerperal fever is very generally insidious in its approaches; when, therefore, the symptoms are developed rapidly, and openly, their very violence should lead us to suspect irritation. In a doubtful case, it is very good practice to order a large enema of soap suds, salt and water, or the like, (not molasses, as it colours the discharges). This is a good remedy, and that, whether the case be puerperal fever or mere irritation; but it is most valuable as a diagnostic. By the nature of the discharges, and the effect of a free evacuation of the lower bowels upon the symptoms, we judge of the nature of the disease. If black fœtid scybala are discharged with some relief to the sense of fullness in the abdomen, we should not think of depletion till the bowels are *thoroughly evacuated*. This may be best done by castor oil and laudanum, or we may give at bed time Pulv. Doveri grs. x.—Pil Hydrargyri. grs. xx., to be followed in the morning by a large dose of rhubarb and magnesia, or castor oil. By these means assisted by repeated enemata the bowels should be *thoroughly* evacuated. This done we

resort to anodynes, of which hyosciamus and camphor, one grain of each, in a pill to be taken frequently, is one of the best I know. Rest, and a nutritious, but non-stimulating diet, will complete the cure. In fact, the great difficulty in this case, is in the diagnosis, if no mistake be made there, the practitioner can hardly go wrong in the treatment.]

CHAPTER XXI.

ORDINARY FEVERS OF PUERPERAL WOMEN.

THE irritability of the nervous system and of certain organs, always more or less dependent upon the puerperal condition, render women liable to a number of febrile affections, besides the formidable disease treated of in the last chapter.

One of the most common of these is the *Ephmera*, or *Weed*. This fever sets in generally during the first three or four days after parturition, with a severe rigor. It consists of a cold, hot, and sweating stage, and may terminate in twenty-four hours, having but one paroxysm. The rigor is often very severe and long continued. During the hot stage there is intense headach, intolerance of light, quick but otherwise good pulse, great thirst, white and coated tongue. Sometimes there is slight abdominal tenderness, and the bowels are generally confined. The sweating in the third stage is profuse, and the symptoms continue very much as in the second. After some hours, the symptoms begin to subside, the patient probably falls asleep, and awakes convalescent. In other cases, the duration of the fever is not so short; other paroxysms (though not so violent as the first) succeed, and the disease may hang on for eight or ten days, constituting what may be called *Intestinal fever*. Weed may be dis-

tinguished from puerperal fever by a want of the tenderness so remarkable in the inflammatory form of that disease, by the regularity of its stages, its history, and by the general contrast that will be observed upon a careful examination of all the symptoms.

The causes of the ephamera, or intestinal fever, are to be found in an irritated state of the intestinal mucous membrane and derangement of the hepatic system, usually occasioned by irregularities of diet, exposure to cold, &c. Among the lower classes of people, nothing is more common than to find weed excited by drinking porter or spirits shortly after delivery; and corresponding irregularities among the rich are attended by similar results.

From what has been said of the causes, the treatment must be obvious. Should it have arisen from the taking of improper food, and our attention be directed to this circumstance at an early period, we may hope to cut short the complaint by the administration of a mild emetic of hippo.* Afterwards, or, without using the emetic, should we not have seen the patient in the commencement, we must set the bowels and hepatic system right by the administration of a purgative, containing some mercurial: three grains of calomel, or five grains of hydrargyrum cum creta, with perhaps a little antimonial powder, may be given, and followed by a senna mixture or a rhubarb draught, according to the circum-

* Hippo is the Irish for Ipecac.—Ed.

stances of the case. When we see a patient during the rigor, we must endeavour to restore warmth and bring on the hot stage by giving warm diluents, and applying heat to the feet. In the sweating stage, we must ventilate the room and lighten the bedclothes, without, however, exposing the woman to any risk of cold. If the headach be severe, or any thing more than a very slight abdominal tenderness exist, it will be erring on the safe side to apply leeches respectively either to the head or belly. Should the fever not terminate at once, our further attentions must be directed to the re-establishment of a healthy tone in the bowels, by careful watching of the secretions, and by the enforcement of a mild unirritating regimen. In the progress of intestinal fever, the bowels may become loose, and the abdomen somewhat tender and tumid, the case, in fact, very much resembling the remittent fever of children. Change of air, and the continued use of mild alterative mercurials (as the hyd. cum creta*) with light bitters (as the infusion of colombo), when the tongue begins to clean, will be the remedies most likely to serve.

It is remarkable that the milk and lochia may continue to be secreted during the existence of this fever. It is almost needless to say, that the most careful attention must be paid to any symptoms of local mischief that may show themselves, either in the abdomen or head.

* R Pil. Rhei comp. ʒss., Hyd. cum Creta ʒj. Fiat massa, et divide in pilulas x., sum. ij. 2dâ quâque nocte.

Miliary Fever.—When the ephemera, or intestinal fever, has been mismanaged, the patient being kept in a heated, ill-ventilated apartment, and the bowels not set to rights, a miliary eruption occasionally supervenes.

This eruption consists of a number of small papulæ, resembling millet seeds, upon the apex of which little vesicles form, containing a fluid at first straw-coloured, and subsequently becoming white or yellow. In two or three days these scab and desquamate, and other crops probably succeed. The papulæ first appear upon the forehead, neck, and breast—rarely upon the face. Two varieties, a red and white, are described, of which the former is said to be the mildest. Before the eruption the skin becomes rough, and there is a sensation in it of prickling heat: after it has appeared, there are frequently other marks of derangement of the mucous membrane, as aphthæ in the mouth, and red-edged tongue. The patient is generally bathed in a profuse acid perspiration.

The treatment is that recommended in intestinal fever, but, as there is usually more debility, bark and mineral acids will probably be required in the latter stages. For further information upon miliary fever, which is not a peculiarly puerperal disease, reference must be made to systematic works upon the practice of physic.

Milk Fever.—When the milk begins to be secreted copiously, there is always some degree of febrile excitement. Should the milk be allowed to accumulate, in consequence of the woman declining to

nurse, or the child being improperly withheld, this excitement becomes an actual fever, ushered in by rigors, and followed by hot and sweating stages, with all the *et cetera* described under the head of ephemera. In addition, there is a distended and very painful state of the breasts.

A smart purgative will be required to allay the fever, but the natural and obvious remedy is, of course, to remove the offending secretion. For this purpose, the child should be applied early, or, if that be not practicable, the breast must be diligently and gently rubbed with a soft hand, and a little sweet oil, until the milk runs from it; or the breast pump may be employed to draw it. Where the woman does not intend to nurse, it is better to avoid the latter, as it rather excites a continuance of the secretion.

The danger in this fever is, that it may terminate in mammary abscess, a most painful and distressing complaint. When we have reason to dread its supervention, from the severity of the fever, the most effectual treatment is to nauseate the patient with tartar emetic. A grain or two of this medicine may be given in the purgative mixture which we usually have occasion to exhibit at the commencement, and if that does not succeed, it may be subsequently given in solution, in doses of an eighth or sixteenth of a grain, every half hour, until nausea is produced. When a patient is not about to nurse, purgatives must be occasionally used, until the secretion altogether ceases, and she must be cautioned to remain quiet, and avoid putting on stays, or any

other tight dress, that may press upon the mammae, while they are in an excited condition. If a mammary abscess be unavoidable, we must promote suppuration by fomentations, &c.* according to the plans laid down by surgical writers.

* The best mode of fomentating the breast is by placing upon it a piece of flannel wrung out of hot water, and over that a wooden bowl (somewhat larger than the gland) which has been heated in boiling water; by this plan a sort of steam bath is formed, and all injurious pressure avoided.

CHAPTER XXII.

PHLEGMASIA DOLENS.

THIS painful affection generally attacks women between the tenth and sixteenth days after delivery, seldom earlier, but sometimes at a much later period. Its subjects are generally persons of broken-down constitutions, and it frequently attacks those who have suffered from hemorrhage or manual interference with the interior of the uterus, and, in whom, before its invasion, there are manifest signs of irritation of that organ.

The disease is usually ushered in by distinct febrile symptoms ; there is a rigor, followed by heat, thirst, loaded tongue, full pulse, and headach. The cause of these symptoms is soon revealed, by the occurrence of pain and stiffness in one of the groins, upper part of the thigh, or labium, or the pain may first be felt in the knee or calf of the leg. This is rapidly succeeded by tumefaction, which spreads from the point first attacked, and, within twenty-four or forty-eight hours, the limb is sometimes increased to nearly twice its original size. There is then exquisite pain, aggravated by the slightest attempt at motion. The limb is tense, white, and shining, is elastic to the touch, and pits very little upon pressure, but gives to the hand passed over it a sense of irregularity, as if it con-

tained numerous little depressions under the tense integument. The swelling, in some instances, goes on slowly, not arriving at its maximum for several days. When the whole extremity is swelled, the violence of the pain abates, but it is still very severe upon the least effort at motion, and the patient loses all command over the limb. The temperature is increased, and there is a good deal of pain upon pressure, which is said to be greater along the course of the veins, but I cannot say that I have observed this to be always the case. At this time, there is a good deal of fever, with a quick, feeble pulse, white tongue, and pale face. The lochia are suppressed, or diminished and fetid, and the urine is muddy. The patient suffers greatly from want of sleep. In six or eight days (more or less in different cases), the febrile symptoms begin to abate, and the swelling slowly diminishes; first, in the thigh, and afterwards, in the leg and foot. As tumefaction decreases, the veins, absorbents, and lymphatic glands may sometimes be discovered, enlarged and indurated, and the limb begins to pit upon pressure, more than it formerly did. The patient remains weak and feeble, with very little power over her leg, which feels heavy, stiff, and benumbed. The disease is generally, at first, confined to one extremity and labium, but it frequently extends to the other. The ultimate recovery is very slow, and there may be a fatal termination, the patient being worn down by the protracted constitutional disturbance, or by extensive suppurations and purulent

depôt's, which occasionally form in the affected limb.

The pathology of phlegmasia dolens is still extremely obscure. By the older writers it was supposed to be an irregular deposit of the milk (*depôt du lait*) ; by others, an extravasation of lymph, in consequence of rupture of the lymphatics ; and, by some, a general inflammatory state of the same class of vessels. None of these hypotheses account for the symptoms, nor are they supported by *post mortem* observations. I cannot avoid expressing the same opinion with respect to Dr. Davis's idea, that the disease is phlebitis of the crural veins. Phlegmasia dolens is well known not to be in general a fatal disease, and it is equally notorious, that phlebitis in any part of the body is particularly mortal. Besides this objection, I cannot see that the phenomena of the disease are at all explainable upon the idea of its being venous inflammation. In the generality of cases of the latter malady, there is nothing corresponding to the peculiar firm swelling of phlegmasia dolens, and an attentive examination of Dr. Lee's cases of actual phlebitis will show that they were very distinguishable from the other disease. I do not mean to deny, however, that inflammation and suppuration of the veins is often to be found upon examination of the bodies of those who have died of phlegmasia dolens, but it appears to me that the evidence already in existence, does not prove that this inflammation is the cause of the swelled leg, but merely that it supervenes, in certain cases, upon that disease. The disease ap-

pears to me to consist in an inflammation of the cellular tissue, occasioning an effusion of coagulating lymph; but how the inflammation is excited, or why it produces those peculiar effects, has not yet been discovered.

The prognosis, when the disease is uncomplicated, is favourable, but recovery is always slow and very protracted.

The treatment in the acute state must be conducted upon the antiphlogistic plan. The nature of the fever and circumstances of the patient, however, generally forbid the use of the lancet, and we usually find it advisable to trust to the application of leeches to the groin and to those parts where the pain is chiefly seated.* Two or three dozen may be applied at first, and subsequently a smaller number repeated, if necessary. The bleeding may be encouraged by warm fomentation with decoction of poppy heads or infusion of chamomile, which latter measure of itself does great service. In some rare cases, more benefit will be derived from the use of evaporating lotions. As the bowels are frequently constipated, we shall probably have occasion to employ an aperient, but it should be of a mild warm kind;† and it is not necessary that its effects should be very

* This restriction from bleeding is too absolute. Dr. Dewees recommends a free use of the lancet in this disease, bleeding so as decidedly to affect the pulse, and repeating the operation if the pulse indicate it. Blundell says, if the patient is robust, a bleeding to 16 ounces will do good.—ED.

† As the infusion of senna, or the rhubarb draught, already specified.

powerful. As the patient's nights are generally sleepless, we shall find great advantage from giving ten grains of Dover's powder and two or three of calomel at bed-time. I think it is generally advisable to give calomel and antimonial powder, so as slightly to affect the mouth, but I should by no means recommend any attempt at speedy salivation. A grain of each three times a day, with the addition of two or three grains of Dover's powder, should the bowels not be confined, will be quite sufficient. The regimen should be antiphlogistic, and strict rest enjoined. After the inflammation has subsided, we must alter our hand, and endeavour judiciously to improve the tone of the constitution. A light nutritious diet may be allowed, change of air, or at all events free ventilation obtained, and the digestive organs improved by the use of light bitters and mineral acids.* While we are acting in this way, however, we shall frequently have to attend to recurring signs of local inflammation, and should always meet them by the application of leeches. The limb must be still kept at perfect rest, in a horizontal position, but when it is able to bear slight frictions with the hand, these will be found serviceable, as will also sponging with tepid salt water: at a later period bandaging and strapping the limb with adhesive plaster may be used. We shall often have occasion for all our ingenuity in contriving plans of treatment, as the fee-

* R Inf. Cascarillæ, Mist. Camphoræ, aa. ʒiij., Sodæ Subcarb. ʒss., Sp. Ammon. aromat. grs. xxx. M. Sum. ʒj. ter quotidie.

ble state of the part may continue for months or even years. When depositions of pus are ascertained to exist in any part of the extremity, free incisions are required to give exit to the matter, the more particularly as it is generally diffused through the cellular and other tissues, and seldom confined by a regular cyst. These cases of abscess are attended usually with very low typhoid fever, and frequently require the exhibition of wine, opium, camphor, quinine, and ammonia.

CHAPTER XXIII.

PUERPERAL MANIA.

THIS occurs in two forms, the maniacal and melancholic, and makes its appearance, generally, within the first few days after labour. A similar disease may also happen when the woman has been exhausted by a continuance of the process of nursing longer than is suitable to her strength. The disease is most likely to attack persons of a nervous susceptible temperament, and whose minds have been shaken by depressing passions, or other causes of mental emotion. "A large proportion of cases," Dr. Gooch states, "have occurred in patients in whose families disordered mind had already appeared."

With respect to the cause, nothing more explicit can be stated than the opinion of the same distinguished writer, that it exists in the peculiar nervous excitement which, more or less, accompanies all the actions of the generative system.

[In some cases a fright experienced during gestation, will seem to have given a shock to the mind, the effects of which will hang about the patient during the remainder of gestation, and after labour burst forth in the form of puerperal mania. All such cases of fright during gestation should be carefully watched.]

The attack is sometimes quite sudden, but more generally the patient may be observed for some time previously to be irritable and peevish, [there is a quick sharpness in the voice, a wild expression of the eye, the manner is abrupt and agitated, she sleeps badly, or she may be] melancholy and gloomy, with a pulse somewhat quickened, and evident marks of disorder of the digestive organs, as furred tongue, yellow conjunctiva, and costive bowels.

[The influence of disorder of the digestive organs, as a pre-disposing cause of puerperal mania, is very well illustrated by a case of Dr. Gooch's. "The patient had the jaundice at the time of her first confinement, and became maniacal; she had a slight degree of it during her second confinement, and suffered from the same disease; she was completely jaundiced *before* her third confinement, but it was removed by purgatives before labour, and she this time escaped her mental derangement."*]

The derangement of mind is very various; in one case the patient being gloomy and desponding, while in another she is so violent as to require the employment of coercion, talking and moving about incessantly, and scarcely ever sleeping. In many instances, there is a very strong disposition to commit suicide.

[The connection of the disease with irritation of the genital apparatus is frequently manifested by the character of the mental disease. The thoughts

* Gooch on women, case 1st, p. 108.—Phil. Edition.—Ed.

run all the while upon the generative functions, the conduct is excessively indecent, and the language shockingly obscene.]

The bodily symptoms are those already mentioned, denoting derangement of the chylopoietic viscera. The pulse is quickened, but not usually to any remarkable degree; and it has been remarked by Dr. Gooch, that a very rapid pulse is a particularly unfavourable sign. The face is most commonly pale, and there does not exist, in ordinary cases, any evidence of inflammation or congestion of the brain.

[There are three forms of mental disease from which it is necessary to distinguish puerperal mania, 1st. phrenitis, 2d. inflammatory headache, 3rd. delirium tremens. From phrenitis we distinguish it by the absence of those evidences of vascular activity which abound in that disease, as full, bounding, hard pulse, hot, dry skin, flushed face, throbbing pain in the head, giddiness, ringing in the ears, and other manifestations of cerebral congestion. Phrenitis, too, is a very rare disease. Inflammatory headach is not very uncommon, but it is rarely attended with delirium, and never begins with it. When the mind is disturbed in these cases it is obviously from the excitement, the pain, and the fever. Delirium tremens occurs earlier than puerperal mania, often in a few hours, always in a day or two, while puerperal mania rarely attacks before the third day, and often not till the second week. Puerperal mania sometimes occurs suddenly, delirium tremens never. The profuse sweatings of the

latter disease are very characteristic, and exceed any thing we are likely to meet with in puerperal mania, though there, a free perspiration is not uncommon. The habits of the patient will, of course, be a good guide, if they can be discovered, but in this case, as in that of doubtful pregnancy, the practitioner must often look for that which he dares not say he suspects. It is very easy in all these cases to attach too much importance to moral evidence, and *scarcely possible to attach too little.*]

The prognosis is generally favourable, but in some cases, especially those in which there is a quick weak pulse, with extreme watchfulness, a state of exhaustion may be produced that will ultimately prove fatal. The probability of complete mental recovery is also considerable, and there are not many chances in favour of a return of the disease in future labours.

[To this favourable prognosis a decided exception must be made of those cases which depend on hereditary taint. Here the disease will usually return with every confinement, and if the patient continue to bear children the repeated accessions of puerperal mania, will, probably, so thoroughly excite the hereditary pre-disposition, as in the end to induce confirmed and permanent insanity.]

The treatment of puerperal mania must be both medical and moral. The former requires very nice discrimination, in order to adapt our measures to the exigencies of each particular case. General blood-letting is very seldom admissible, and never required, unless there exist manifest tokens of con-

gestion or inflammation of the parts within the cranium. Even where these exist to a certain extent, it will be better, if possible, to meet them by local than by constitutional depletion, and the utmost ordinarily required is the application of a few leeches to the temples. Attention to the intestinal canal will always be requisite, but the kind and degree of it must depend upon the peculiar circumstances of the case. If there be a loaded tongue, a yellow eye, and an offensive breath, all indicating the stomach as the seat of irritation, a mild emetic of hippo will often be of signal service. This may be followed by a purgative, or, where the former is not admissible, the latter may be administered at once, and should be of such a nature as will produce evacuations without exciting much secretion from the mucous membrane.* From the want of sleep suffered by the patient, it is obvious that narcotics are indicated, and accordingly we shall find our most valuable remedies in that class of medicines. It will be of course advisable to see that there is no great vascular excitement before we use them, and it will generally be necessary to premise laxatives.

* Dr. Gooch recommends for this purpose the aloetic pill, or compound decoction of aloes. I must here acknowledge that gentleman's excellent paper as the source from which the above brief sketch of puerperal mania was chiefly drawn. To that essay, as indeed to the whole of his writings, the reader's attention may be directed, upon his own principle, as to the work of "a master mind, which we return to again and again, not merely for the knowledge which it contains, but to observe how that mind worked."

The black drop will be found to be one of the best forms in which we can administer opium. A full dose (say twelve drops) may be given, and repeated in an hour or two if it fail to produce sleep. Smaller doses may be subsequently employed, to keep up the calm produced by the first. Should the stomach bear it, the Dover's powder will also be found very serviceable, and if it be necessary to vary the medicine, extract of hyoscyamus and camphor may be given together, in a dose of five grains of each. In the latter stages of the complaint, when the vascular excitement has entirely subsided, it will be necessary to have recourse to light bitters and mineral acids, for the purpose of improving the patient's general health.

The diet ought always to be sufficiently nutritious; of course, it must be of a light and unheating kind, and given with due regard to the disordered state of the digestive organs. In some instances wine may be beneficial; its use, of course, to be regulated according to the judgment of the practitioner. When the disease occurs in individuals weakened by protracted nursing, there is a still more imperative demand upon our discretion, in the avoidance of every thing that may unnecessarily lower the strength.

The moral management should be intrusted to persons accustomed to the care of the insane. In the first instance, the patient should be put under the charge of a nurse of this description, by whom she should be closely watched, and every instrument that might be employed for the purpose of

suicide, must be carefully put out of reach. When the disease is likely to be protracted, it becomes a question as to whether it may be advisable to place the woman completely in the hands of a physician who makes it his business to treat insanity. On this point, of course, no general rules can be laid down; the taking of such a step, and the mode of taking it, must altogether depend upon the circumstances of the case. Dr. Gooch forbids all intercourse with the husband; but I lately heard of a case in which this rule was not adhered to, and yet rather good effects attended its violation.

[*Preventive Treatment.*—Whenever, from the constitution of the patient, from hereditary taint, or from any other cause, we have reason to apprehend puerperal mania, the greatest possible care should be taken to remove all exciting causes. The alimentary canal should be thoroughly cleansed before delivery, and its secretions, if vitiated, corrected. Every form and variety of mental and moral irritation should be guarded against, and the first beginnings of restlessness, want of sleep, or mental agitation, met with opiates and sedatives. If there is much debility a supporting plan will be necessary, nothing is more likely to excite puerperal mania than exhaustion. After delivery great tact is required, to decide as to when, and under what restrictions, the patient should see company. If she is too much secluded, she is *delivered over defenceless* (if I may say so) to the attacks of her excited imagination. If, on the contrary, she see her friends too soon, or under improper circumstances, their

conversation will prove a stimulant, which will completely upset her mind. To avoid both extremes is not always easy ; that end is best gained by affording to the patient, at as early a period as possible, such company as will pleasantly occupy, but never excite her mind. Quiet conversation, made up of small and pleasant details, is the charm by which such imaginative beings are often won from the dominion of fancy, and restored to that of reason.

A great deal may be done by giving constant employment, even carried to fatigue, in the ordinary, every-day duties of house-keeping, before delivery. In one case, where I had every reason, except hereditary pre-disposition, to apprehend puerperal mania, I think the patient's escaping an attack was mainly owing to her having taken an active part in the duties of her establishment.]

Actual Phrenitis occasionally occurs during the puerperal state, and requires a treatment of course essentially different from that just laid down. Instead of the supporting and tranquillizing system generally adapted to puerperal mania, the most active depletion will be required in phrenitis, and will too often fail of success. The treatment of this formidable disease does not come within my purpose, and it is only mentioned, to remind the reader of the necessity of discriminating justly between it and puerperal mania.

NOTE ON THE MEANS OF RESUSCITATING STILL-BORN CHILDREN.

IN addition to the measures recommended for this purpose at p. 131., viz. tickling the mouth and fauces, rubbing and gently slapping the chest, and allowing the funis to bleed, we are advised by most obstetric authors to employ the warm bath and artificial inflation of the lungs. Recent enquiries, however, have thrown considerable doubt upon the propriety of adopting either of these measures. According to Dr. Edward's experiments, the warm bath must act injuriously, by excluding the atmospheric air, which he found to play a most important part in the removal of asphyxia. Again, the observations of MM. Leroy and Majendie prove "that brisk inflation of air into the trachea killed rabbits, foxes, goats, sheep, and other animals, even when the force employed was that of an expiration from the human lungs," and that "from the records kept in the city of Paris of the results of means employed for the recovery of persons drowned, the greater prevalence of the practice of insufflation has been coincident with a decrease of the number restored to life."* Mr. Porter, who performed experiments similar to those of Leroy, and with like

* Review of Dr. Kay's work on Asphyxia in *Med. Chir. Rev.* for July, 1831.

results, before he knew of the investigations of that gentleman, mentioned to me the fact that insuflation of cold air from a bellows, in the event of the person's resuscitation, seldom fails to produce dangerous bronchitis. From a consideration of these circumstances, I would recommend heat to be applied to a still-born infant, by holding it before a fire upon a person's lap; the chest and abdomen to be well rubbed with warm, dry flannel; and the nostrils and fauces to be tickled with a feather dipped in spirits. The lungs may be filled once or twice, by the operator applying his lips, with a bit of silk or muslin intervening (for the sake of cleanliness) to those of the child, and gently breathing into its mouth. While doing this, the nostrils must be held between the finger and thumb of one hand, and the fingers of the other should be placed upon the pit of the stomach, so as to prevent the air from passing into that organ. When the chest has been distended, it may be compressed gently with the hand, so as again to empty it, and the inflation may be repeated once or twice. It should not, I think, be done much oftener, and always with the greatest gentleness. The trachea pipe, which certain teachers have recommended to be carried by every accoucheur, should, in my opinion, never be resorted to.

APPENDIX A.

Vide p. 109

The Editor here presents for the use of his own students, the Classification of Labours which he adopts in his Lectures.

Classification of Labour.—There is an almost infinite variety in the classifications adopted by celebrated men. I note only the most generally adopted.

Hippocrates divided labours into natural and preternatural. This division is adopted by Merriman, Conquest, Blake, Velpeau and Dewees. Baudelocque makes three classes—natural, manual, and instrumental, he is followed by Dubois, Boivin, La Chapelle, Desormeaux, and by the French writers generally. Denman makes four classes—natural, difficult, preternatural, and anomalous or complex. To this classification Hamilton, Maunsell, and most of the British writers adhere. Blundell adds a fifth class of flooding labours. Dr. Davis makes four classes—natural, preternatural, complex, and instrumental. Ashwell three—natural, preternatural, and complex. Burns augments the number to six—natural, premature, preternatural, tedious, instrumental, and complex.

I adopt the classification of Ashwell, but I do not like his nomenclature, though it is the one very

generally, indeed almost universally adopted. The term, *natural*, is used as synonymous with regular, easy, or, as Merriman has hellenised it, *Eutochia*. As opposed to this, the term *preternatural* is applied to footling and other like cases. Now this nomenclature is obviously improper. Is not labour always a natural process? Is it not a natural function of the uterus, just as much so as menstruation? Yet who ever thinks of speaking of *preternatural* menstruation? Is not a footling case just as *natural*, just as much the product of nature, as a vertex presentation? The one is usual, the other unusual, but to neither can the term *preternatural* be applied without a verbal absurdity.

But my objection to the terms *natural* and *preternatural*, goes deeper than to their mere verbal accuracy, I think they have a bad practical tendency. If a man is taught to think certain forms of labour *preternatural*, he will be unwilling to leave them to nature, or to allow nature to have anything to do with them. These terms tend to diminish our confidence in, and our reliance upon, that best of midwives, Dame Nature, and anything that does this, that thrusts nature back, and art forward, that substitutes a fussing, meddling, mischievous "obstetric operator," in the place of Benignant Nature, imposes upon him any of her duties, or trusts him with the performance of any of her functions, will always find in me an earnest, if not a vigorous opponent. But if we discard the terms *natural* and *preternatural*, what others shall we adopt in their place? The choice is not difficult; to make it we have only to

enquire what do we actually *mean* by natural—evidently we mean regular—very well, then say regular; instead of preternatural say irregular, to Ashwell's term for the third class I do not object, we mean complex, let us therefore say complex.

I arrange labours then into three classes.

1. *Regular*.—Where the head presents, and no important complicating circumstance occurs.

2. *Irregular*.—Where some part other than the head presents, without any complication.

3. *Complex*.—Where labour in its progress is attended by some important circumstance, essentially complicating the process.

Proceeding to sub-division—of the first class I make two orders.

Easy.—Where the process is completed with ordinary facility.

Difficult.—Where the labour is attended with unusual difficulty, from some cause not essentially complicating it.

Of the second class I make four orders.

1. Where the breech, the knees, or the feet present.

2. Presentations of the shoulder, elbow, or hand.

3. Presentations of the trunk, whether by its anterior, its posterior, or one of its lateral surfaces.

4. Where two parts present, as the head and hand.

Of the third class I make eight orders, according to the complicating cause.

1. Labour with convulsions.

2. Labour with hemorrhage.

3. Labour with presenting placenta.
4. Labour with retained placenta.
5. Labour with prolapsed cord.
6. Labour with plurality of children.
7. Labour with ruptured uterus.
8. Labour with inverted uterus.

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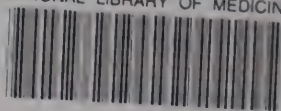
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